TECHNOLOGY

Devoted to
TEXTILE
CHEMISTRY
BLEACHING
DYEING
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AMERICAN
DYESTUFF REPORTER

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DETROIT

Partners in Brown

Solophenyl* Brown G L *(Golden shade)* joins Solophenyl Brown R L *(Reddish shade)* to give the dyehouse a variety of true Direct Browns possessing the extreme in light fastness and washing.

Mills producing fabrics requiring the ultimate in light resistance, either on Cotton or Rayon will find these Browns to be ideally suited.

Other Solophenyl colors possessing these characteristics now are available to make a wide range of shades.

Booklets displaying the Solophenyl colors are available.

*Reg. U. S. Pat. Office.

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OFFICIAL PUBLICATION
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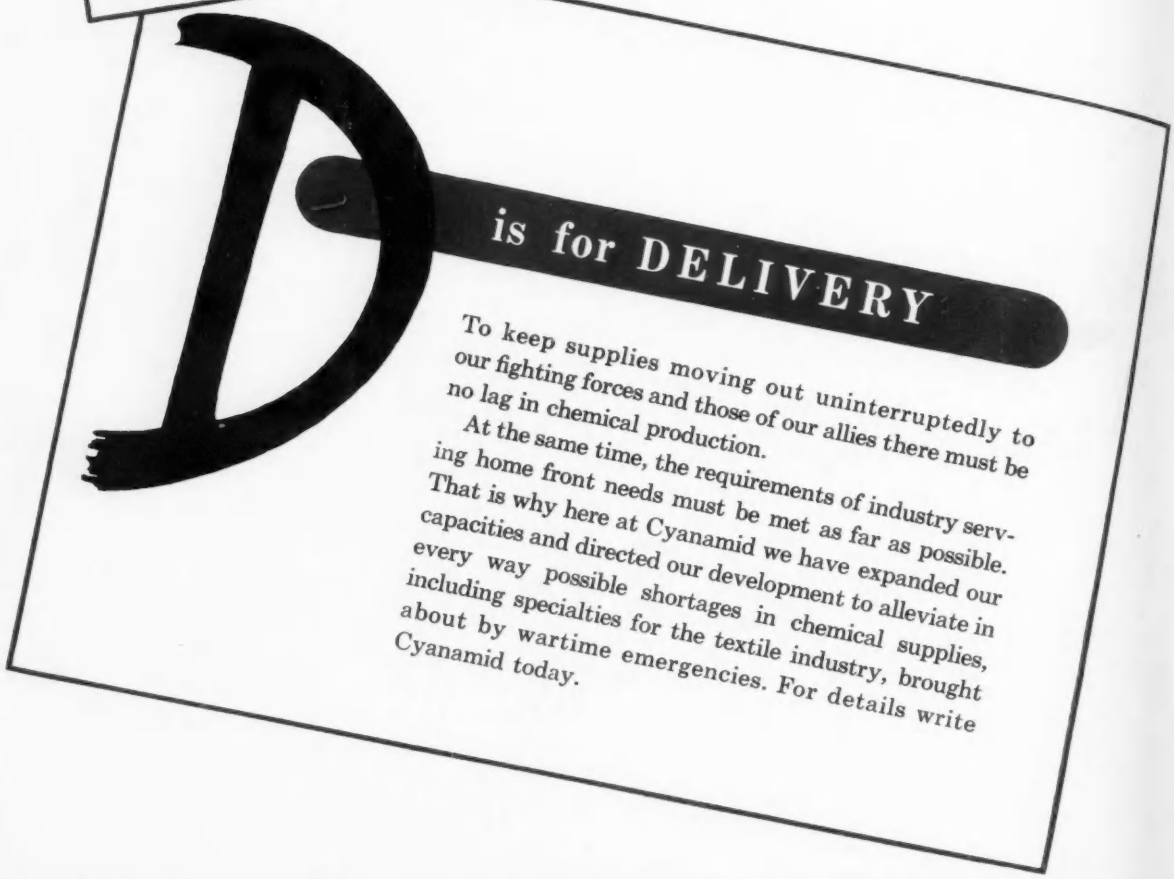
AND COLORISTS

D is for DEMAND...
Time is recognized as our most "critical" war material, the common denominator to every vital wartime undertaking that must turn out *more* things *faster*.


D is for DELIVERY
To keep supplies moving out uninterruptedly to our fighting forces and those of our allies there must be no lag in chemical production.
At the same time, the requirements of industry serving home front needs must be met as far as possible. That is why here at Cyanamid we have expanded our capacities and directed our development to alleviate in every way possible shortages in chemical supplies, including specialties for the textile industry, brought about by wartime emergencies. For details write Cyanamid today.

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A Unit of American Cyanamid Company
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SULPHONATED OILS • PENETRANTS • SOFTENERS • FINISHES
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**Reg. U. S. Pat. Off.*

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Chlorine, prime processing agent in the manufacture of ethylene glycol, is but one of the many Mathieson products which are contributing directly to the production of war materials. To mention only a few of the essential war uses of Mathieson chlorine, it plays an important part in the manufacture of aluminum . . . plastics . . . synthetic rubber . . . petroleum products and high explosives. Other basic "war chemicals", manufactured by The Mathieson Alkali Works and supplied directly to war industries or to our armed forces, include caustic soda, ammonia, soda ash, carbon dioxide and calcium hypochlorite. A highly mobile, dry chlorine carrier, calcium hypochlorite is used extensively at training centers and other military establishments to combat the deadly menace of water-borne diseases.

In a larger sense, Mathieson Chemicals are fighting a menace greater and more deadly than any the world has ever known—the arrogant, over-weening ambitions of the Axis tyrants, men without conscience and without mercy. Until they are removed forever from the high places of evil, there can be no let-up in the pace of war production here at Mathieson.

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For the Service of the Army and the Navy

In the processing and finishing of fabrics for use in all branches of our Armed Forces, from parachute cloth to the hosiery of the Wave, the Spar and the Waac, Onyx Products are setting new records in improving the appearance, bettering the wearing qualities and increasing production on these much needed items.

A few Onyx Products making war fabrics look better—wear longer.

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If you have a processing or finishing problem Onyx Research can help you. Your inquiries are solicited.

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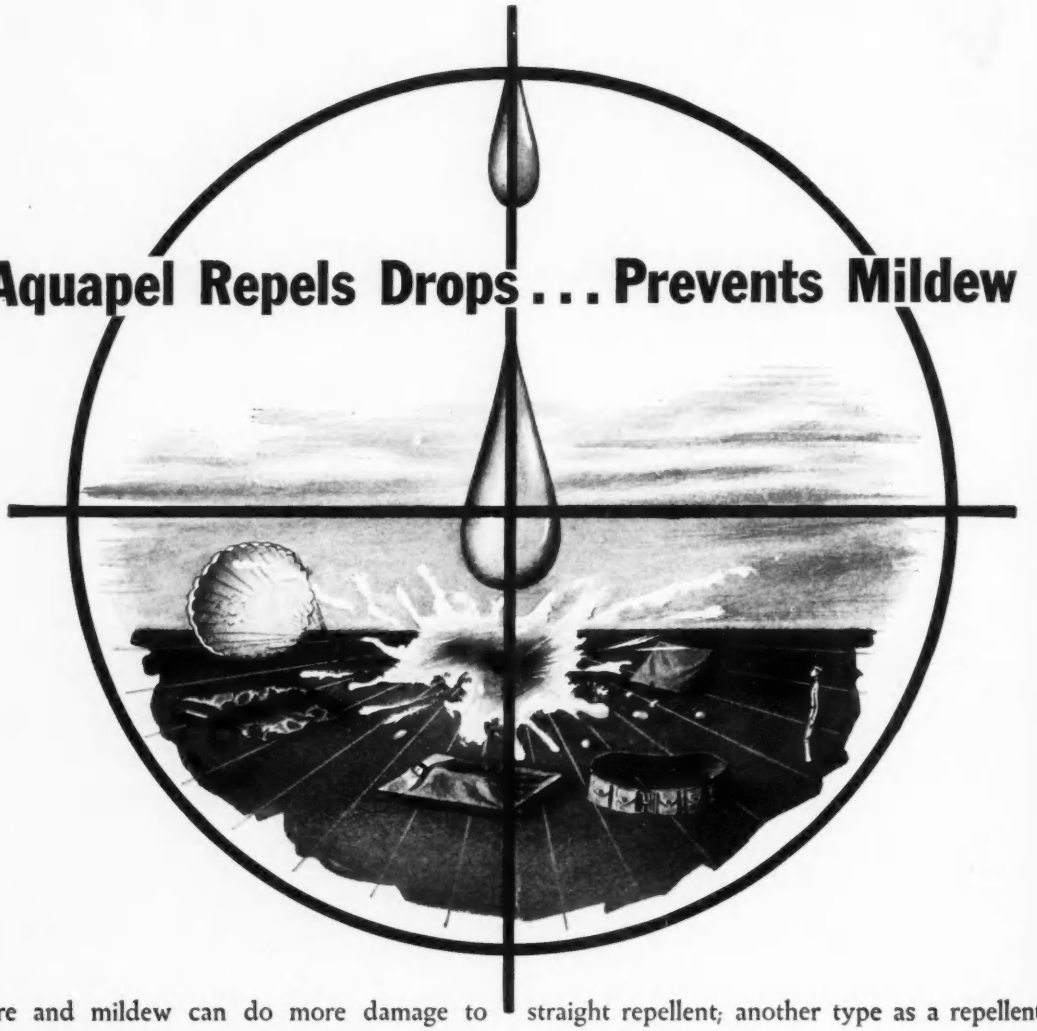
BUY WAR BONDS AND STAMPS—. EVERY DAY.

Aquapel Repels Drops . . . Prevents Mildew



Moisture and mildew can do more damage to military materials than bombs for they never miss their target. Stopping moisture-mildew menace to hundreds of war-useful materials is the job of the Aquapel group of Fanco products.

There is a type of Aquapel suited to every fabric and need. Aquapel can be applied in a single bath operation. One type Aquapel can be used as a straight repellent; another type as a repellent and mildew preventative.

If you're working on or toward a military contract, you'll find that Aquapel has been designed to meet rigid government specifications. A call, letter or wire will get Aquapel working for you.

Webbing Requires Aquapel
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For Uniform Cloth Use Aquapel
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in Properties and Performance

Thirty-five foot high "Karbate" absorption tower equipped with graphite trays and bubble caps. One of many examples of the application of these materials.

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CARBON AND GRAPHITE PRODUCTS

are being used successfully in a wide range of important applications in the mechanical, electrical and process industries because of the many advantages offered by their unique combination of physical and chemical properties.

- Resistance to severe thermal shock.
- No deformation at high temperatures.
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- Mechanical strength maintained at high temperatures.
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- High rate of heat transfer (Graphite and Graphite Base "Karbate" products).
- Low rate of heat transfer (Carbon and Carbon Base "Karbate" products).
- Good electrical conductivity.
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- Available in impervious grades.
- Available in highly permeable (Porous Carbon and Graphite) grades.
- Easily and accurately machined and fabricated.
- Molded and extruded in special shapes when quantity justifies.

Carbon and graphite materials are available in the form of:
Brick, Blocks, Beams, Plates, Flat or Hollow Tile,
Slabs, Pipe, Tubes, Rods, Cylinders, Cement, Paste.

A variety of sizes permits fabrication of all types of equipment from small intricate parts to huge all-carbon structures.

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Conventional design has been improved and simplified new design made possible by the use of "National" and "Karbate" carbon and graphite products. Following are some of the more important applications:

Heat Exchangers; Towers and Tower Equipment; Raschig Rings and other Tower Packings; Pipe, Valves and Fittings; Tanks, Tank Linings and Miscellaneous Containers; Filter and Diffuser Elements; Packing, Piston and Seal Rings; Bearings; Molds, Mold Plugs, Inserts and Stools; Ground Anodes; Welding Electrodes, Rods, Plates and Paste; Brushes and Contacts; Miscellaneous Electrical and Chemical Specialties.

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Unit of Union Carbide and Carbon Corporation
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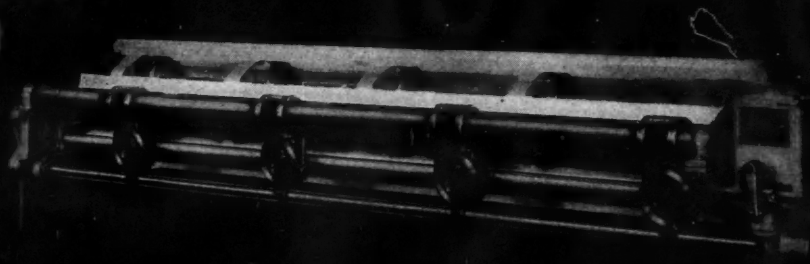

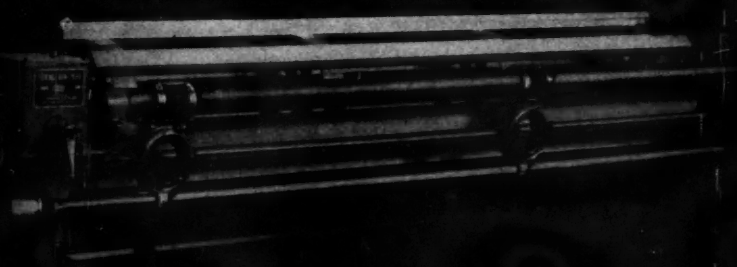

You cannot afford to pile by hand

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technical service... this term includes the many types of service rendered by a technical service laboratory. The dyestuff concern which undertakes these technical functions must use that essential extra ingredient of sound judgment... judgment which manifests itself in logical conclusions based on sound knowledge... General's technical service is founded on years of intensive laboratory research... and practical mill experience.

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You lick both Mildew and Wet Weather with FEN

Non-toxic one-bath treatment for water-repellency and anti-mildew

Take two palm trees . . . add a sturdy canvas hammock treated with Fen-Aseptic for water repellency and anti-mildew . . .

Result: Comfort and safety for our soldiers in the tropics.

If you are working on fabrics for jungle warfare, investigate the advantages of Fen-Aseptic. It's a non-toxic one-bath treatment for water repellency and anti-mildew.

Non-toxicity means positive protection—for your men who apply the finish, for the soldiers who use the fabrics.

The one-bath treatment saves time in handling. Cuts cost of labor and chemicals. Easily applied on quetsch, padder, jig, beck, starch mangle or continuous process machine, followed by drying at an elevated temperature.

Fen-Aseptic meets government specifications for mildew-proofing and water repellency. Now being used on a wide variety of military fabrics. See list below.

Fen is available three ways—Fen Water Repellent, Fen Anti-Mildew and Fen-Aseptic, a combination of both. Write us.

When fabrics call for water repellency alone, depend on Fen Water Repellent. Proof of superior results is given in folder, "Take a Lesson from the Mermaid." Write for a copy.

FEN-ASEPTIC is a non-toxic one-bath treatment combining water repellency and mildew-proofing. Now being used for fabrics such as:

- Jungle hammocks
- Ducks and twills for shelter tents
- Barracks bags
- Uniform twill
- Cotton cloth
- Cotton sleeping bags
- Duck netting
- Mosquito bars

FEN WATER REPELLENT is being used on fabrics such as uniform twill, herringbone twill, cotton duck for case covers, canvas for leggings

FEN ANTI-MILDEW is being used on fabrics such as camouflage cloth, sandbagging, cordage and thread, burlap and osnaburg.

FEN

Amalgamated Chemical Corp., Philadelphia, Pa. Southern Representative: Robt. A. Bruce, P. O. Box 35, Greensboro, N. C. : : Makers of a complete line of Textile Finishes, Dyeing Agents, Penetrants and Softeners.

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LIQUID · FLAKE · SOLID
Through 1943 we have every reason to believe that we can continue to provide the full requirements of old and new users of Westvaco Caustic Soda, both as to quantity and quality.
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(Fast to Salt Water and Washing)

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The complete Campbell line includes all dyestuffs for service fabrics and civilian needs

CHROMAZINE
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CHEMICALS . . .
Available in Limited Quantities

. . . a bulletin about chemicals that can be supplied now in commercial amounts

---

CARBIDE and Carbon Chemicals Corporation produces more than 160 synthetic organic chemicals, and the supply situation among these products is constantly changing. Right now a number of them, including those described here, can be supplied in l.c.l. quantities. Some are available now because they are co-products in the making of other chemicals being used for high priority applications. Others are on hand because customers' plants have shifted to war production or cannot get other raw materials to go with them.

Before making a decision that depends on the supply of one of our products, check with us. Our technical service staff can give you up-to-the-minute information on delivery dates and quantities available. They can supply you with technical data on the chemicals we make, and can help you in the selection of replacements for unavailable materials.

At the time this magazine went to press these chemicals listed here . . . and a number of others . . . could be supplied in l.c.l. quantities. If you are interested in obtaining quantities of any of them, write or wire immediately since the supply situation may change at any time.

Diethyl "Cellosolve" is a stable ether that boils at 121.4°C. Since it dissolves both oils and water, it is a good mutual solvent, and it can be used with detergents and wetting agents of limited water solubility to prevent gelling or clouding in dilute solutions.

Ethylbutyl Acetate is a colorless liquid that boils at 162.4°C. Resembling amyl acetate in many of its properties and having the same toluene nitrocellulose dilution ratio (2.1), it is used as a moderately high boiling solvent in lacquers and synthetic resin finishes. Its evaporation rate is somewhat slower than that of amyl acetate; therefore, lacquers made with Ethylbutyl Acetate form smooth high-gloss films with little tendency to blush or orange peel. Ethylbutyl Acetate can also be used in nitrocellulose printing inks.

Isophorone is a high-boiling (215.2°C.) cyclic ketone with properties similar to those of cyclohexanone. It is the most powerful solvent known for polyvinyl chloride resins. Its carbonyl groups can be reacted with aldehydes, hydrocyanic acid, amines, and nitrogen derivatives, and it forms halogen, mercaptan, halogen acid, and alkyl amine addition products.

For information concerning the use of these chemicals address

CARBIDE AND CARBON CHEMICALS CORPORATION

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30 East 42nd Street, New York, N. Y.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

A DIFFERENT WAR? YES!

. . . and a different war presents new and difficult problems.

Uncle Sam's fighting men in the jungle, in the Arctic, on the desert - - all over the world - - are demanding fabrics finished to meet the extreme conditions of this *new* kind of war. ● Arkansas' vast peacetime experience is now solving wartime problems . . producing for textile processing and finishing plants products that meet exacting government specifications.

FRONT LINE PRODUCTS

FUNGICIDE G For mildewproofing all types of cotton cloth used in sleeping bags, webbing, tentage, mosquito netting, etc.

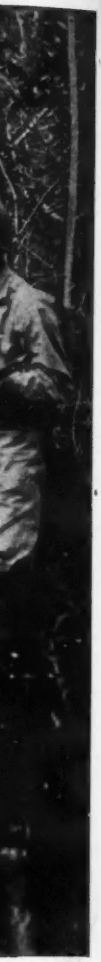
ARKO FIRE RETARDANT For flame-proofing uniform cloth, tentage, felts, etc.

CULOFIX L* For preventing color-bleed in water of direct dyed cotton.

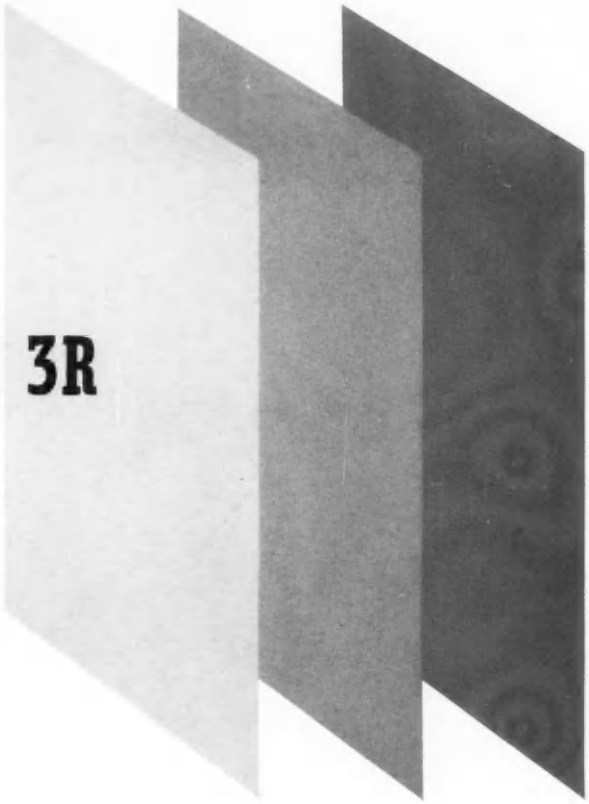
AQUAROL* Produces a water-repellent finish on uniform cloth, overcoatings, and other military fabrics . . used in a single bath treatment with Fungicide G to impart water-repellency and mildew resistance . . used in a single bath treatment with Arko Fire Retardant to produce water-repellency and fire-resistance.

*REG. U.S. PAT. OFF.

ARKANSAS CO. INC. NEWARK · NEW JERSEY



EASTONE* ORANGE 3R



Eastone Orange 3R,* used as a self-shade, produces bright orange reds on cellulose acetate rayon and a very desirable scarlet on nylon. Used as a component for deep shades of brown, rust, and wine, it will be found to offer exceptional money value.

This dye has excellent solubility and level dyeing properties. It is recommended for both box and jig dyeing methods, and has been used extensively in application printing for producing brilliant shades which have good fastness to sublimation and washing.

Eastman Acetate Dyestuffs offer a wide variety of different colors especially developed for the dyeing of acetate rayon fibers and fabrics in which they are used. For information on Eastman Acetate Dyestuffs and their application consult our New York Sales Representative: F. L. Bume, 10 East 40th Street, New York, N. Y., or write TENNESSEE EASTMAN CORPORATION (Subsidiary of Eastman Kodak Company), KINGSPORT, TENNESSEE.

EASTMAN ACETATE DYESTUFFS

** "Eastone" is a registered trade mark and denotes a type of dye which is dischargeable, as well as usable for plain dyeing.*

MILLS THAT PRODUCE fine fabrics like those used in the wool slacks and tweed jacket shown here, are among the most consistent users of Colgate-Palmolive-Peet processing agents. They know from experience they can depend on C.P.P. soaps and detergents for uniformly excellent work in all processing operations.

Ask your local Colgate-Palmolive-Peet representative for information on the full line of C.P.P. wetting, fulling, scouring and dispersing agents. They are equally effective on any type of fabric, regardless of style and material changes resulting from the war.

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COLGATE-PALMOLIVE-PEET CO.

Kansas City, Kansas
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COLGATE KWIKSOLV • COLGATE FORMULA 25 • BADGER FLAKES • COLGATE WHITE SOAP FLAKES • ARCTIC CRYSTAL FLAKES

BECAUSE CEGLIN* works unusually well as a binder for pigment dyes and in conjunction with water-repelling and mildew-proofing agents, it is the perfect cellulose finish for all cottons.

CEGLIN increases fabric strength and durability, stabilizes shrinkage and stretching, and increases resistance to slippage, distortion and abrasion.

Fast, even to kier boiling, CEGLIN may be applied before boil-off, before or after bleaching, during mercerization, before or after dyeing, or as a final finish. It is available in either dry or solution form to suit your particular convenience and requirements.

*Trade Mark Reg. U. S. Pat. Off.

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Pigment Colors for Use with Ceglin* Developed and Sold by
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WHEN you get a strange new mixture of fibers to dye or print

WHEN an unusually difficult color match is urgently needed

WHEN dyehouse costs get out of line

WHEN color formulas must be changed to handle non-priority orders

THEN *National Aniline Can Help*

You know the National Technical Service man, of course. His first job is to be helpful to you... to bring you the composite experience of National Technical Service in every field where color is used...to help you match your standards of fastness with the dyes immediately available.

We invite you to use this practical help

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ALLIED CHEMICAL & DYE CORPORATION

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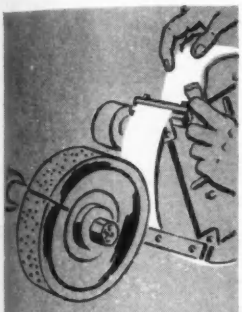
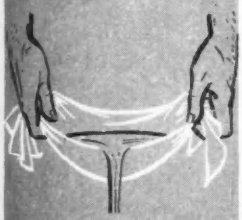
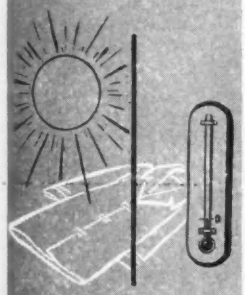
VINYLITE Resins are adaptable to several cloth-coating techniques



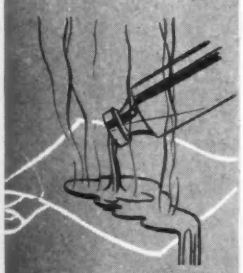
ABRASION RESISTANCE



WATER RESISTANCE



RESISTANCE TO HEAT AND COLD



CHEMICAL RESISTANCE

FORMULATED from high molecular weight vinyl chloride-acetate resins and suitable plasticizers, VINYLITE Textile Coatings are readily adaptable to a number of different methods of application. Not only can solutions and emulsions of VINYLITE Resins be applied by spreader-coating, roll-coating, and dipping, but other VINYLITE Resin Compounds that contain no solvents can be softened by heat and can be calendered onto cloth while hot.

"VINYLITE" RESINS IMPART MANY NEW PROPERTIES TO TEXTILES! Because of the versatility of VINYLITE Resins, it is now possible to give textiles and textile products many new and important properties. Types of VINYLITE Resins are now available, for example, for coatings that will not become brittle or sticky in extremes of cold or heat, and that successfully meet temperature specifications that range from –50 deg. F. to 250 deg. F. Raincoats and paulins made from cloth coated with these resins are waterproof, wear-resistant, and weather-resistant.

"VINYLITE" RESINS SUPPLANT RUBBER IN MANY APPLICATIONS! VINYLITE Resin Coatings are not subject to oxidation, have better resistance to oils and gasoline than rubber, have higher tensile strength than rubber in comparable hardness ranges. They can be made non-flammable, and are non-toxic, odorless, and highly resistant to most chemicals. They also possess unusually high abrasion resistance. In wear tests on inflatable equipment, for example, Elastic VINYLITE Resin Coatings provided *8 times* the protection offered by rubber! These many advantages enable VINYLITE Resin Coatings to supplant rubber in many essential applications—raincoats, paulins, tenting, water and food bags, upholstery, hospital sheeting, and chemical-resistant clothing. Cloth products waterproofed with VINYLITE Resin Coatings can be made much lighter than those treated with rubber—in one instance, only 2.5 to 3.0 ounces of VINYLITE Resin Compound being required per square yard as against 8 to 10 ounces of rubber compound! The resin-coated cloth, moreover, is ready to use as it comes from the rolls, with no further processing required, such as curing or vulcanizing.

ENLIST THE AID OF OUR TECHNICIANS AND LABORATORIES! Thus the unusual properties of VINYLITE Resins, plus their adaptability to several different methods of fabrication, make them particularly valuable for a wide variety of essential coated textile applications. If you are seeking coatings with these unique characteristics for your own textile products, enlist the aid of our technicians and Development Laboratories. Write Department 13.

Plastics Division

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

UCC

30 EAST 42ND STREET, NEW YORK, N. Y.

Vinylite*

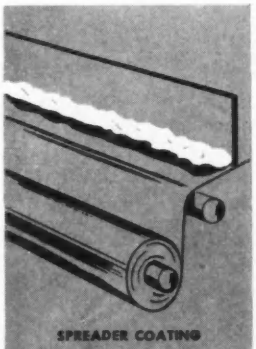
TRADE MARK

PLASTICS

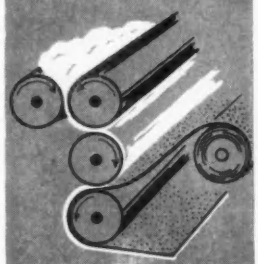
ELASTIC PLASTICS · RIGID PLASTICS

RESINS FOR ADHESIVES · RESINS FOR SURFACE COATINGS

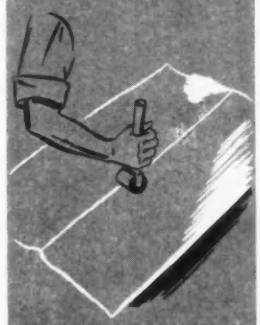
**The word "Vinylite" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.*



SPREADER COATING



CALENDERING



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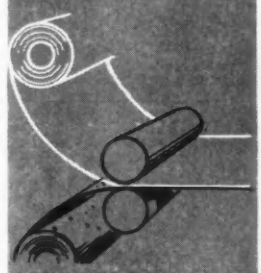

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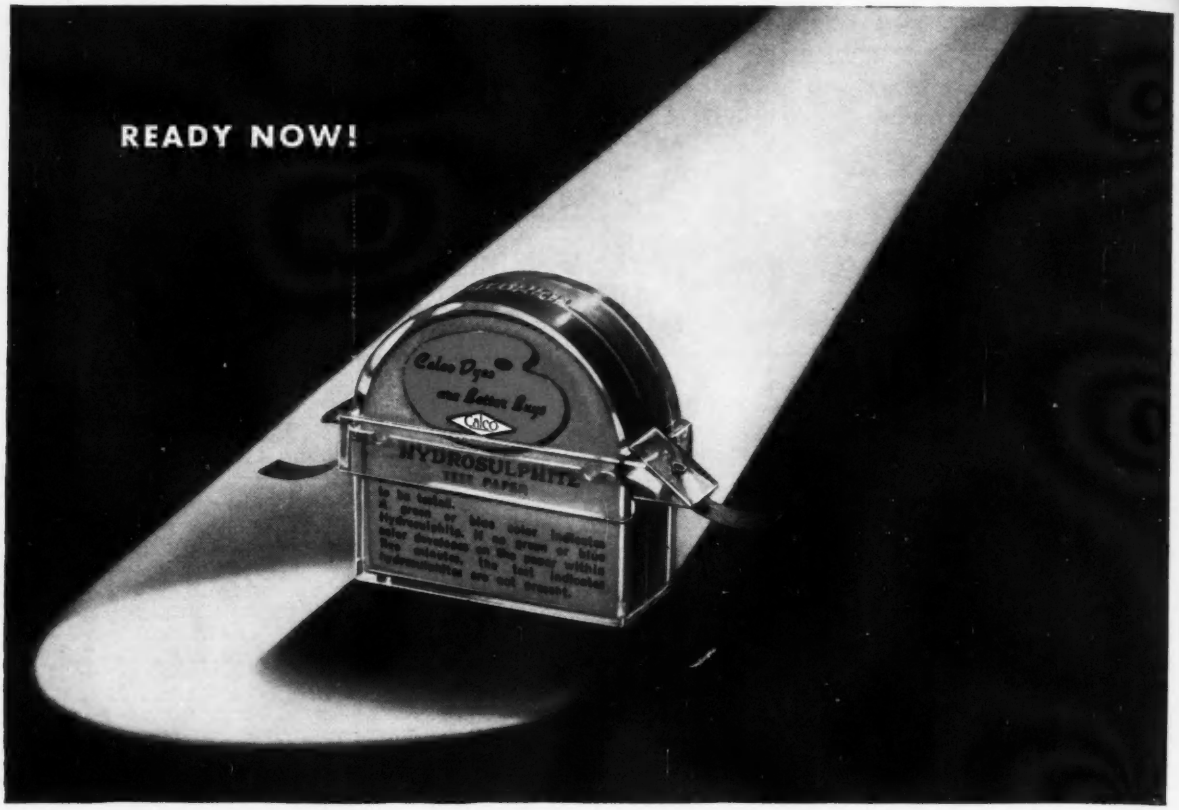

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THE FINISHING OF ARMY DUCKS

with Special Reference to Mildewproofing*

ELMER C. BERTOLET

Engineering Division, Jeffersonville Quartermaster Depot

FOUR specifications are in force for the processing of duck and twills. Specification J. Q. D. No. 226A and J. Q. D. No. 231A cover vat and mineral dyeing respectively; J. Q. D. No. 190E covers the dyeing or camouflage printing of 9.85 and 12.29 oz. duck for Jungle packs and J. Q. D. No 242, the fire, water and weather resistant duck. J. Q. D. No. 242 has recently replaced Federal Specification CCC-D-746 and the finish has been known as the 746 finish and may continue to be referred to as such in the trade. Aside from the above, some small amounts of sulfur dyed materials are procured for other services. The main objectives in processing duck according to these specifications is to give protective coloring for the soldier and to preserve the life of the fabric in use.

FIRE, WATER, WEATHER RESISTANT DUCK

Fire, water, weather resistant duck is a coated fabric used for tentage. Duck so finished reduces the danger from accidental fires, from sabotage, and incendiary bombs. It is waterproof, mildew proof, fireproof, and has greater tensile strength and opacity than the grey duck from which it is made. Dyed to match the olive drab No. 746 shade which is a deep dull green, it has the further advantage of protective coloration.

The coating compound is formulated to include fire retardants, stabilizers, color pigments and vehicle which would include a film former.

Mandatory are chlorinated paraffins, antimony oxide, ethyl cellulose, or modified urea-formaldehyde or modified phenol formaldehyde, calcium carbonate, precipitated iron oxide, lead chromate, blue tone lampblack or carbon black, Phthalocyanine Blue, chromium oxide, pentachlorphenol. Optional materials like non-volatile plasticizers, aluminum stearate, water ground mica, copper stearate or oleate are allowed. The compound is usually formulated with mineral spirits.

The treated duck, when finished, has been increased in weight from 40 to 60 per cent, usually between 40 and 50 per cent. In applying the coating the goods pass through the cold formulation and then between heavy squeeze rolls, or the compound may be applied by the use of spreaders, usually coating both sides on one run. The solvent is evaporated by passing either over drying cans, by passage through tunnel dryers where the solvent may be recovered, or by festoon drying.

The requirements and tests of the finish are covered by Specification J. Q. D. No. 242. This tentative specification for fire resistant duck is not intended to be restrictive in the sense that it might discourage research and development work. We are constantly conducting a very large amount of research and development work and will amend the specification at any time when it appears that an improved finish can be obtained.

MINERAL DYEING

Mineral dyeing has been used to rather a large extent. Colors fast to weathering have been produced by it and vat dyes conserved. With the increase in the production of vat dyes, the use of mineral dyeing will, no doubt, decline. Mineral dyed goods though cheaper to produce, present more difficulty in fabricating equipment than vat-dyed materials.

Until the present war, mineral dyeing was used chiefly for dyeing various shades of khaki. To obtain these, suitable mixtures of iron and chrome acetates were used. The U. S. Navy used a light pearl shade which is dyed with chrome and without the use of iron. This is required to contain 2½ per cent chromium oxide. While the Army has used some khaki, practically all the procurements in this war have been in the olive drab No. 3 shade. The tremendous demands in preparation for the war brought the country face-to-face with a shortage of vat dyes. The needed types of vat dyes in the necessary amounts were not available. Efforts to match the olive drab No. 3 shade with mineral dyes were successful and a close approximation of the shade was obtained by the use of colloidal carbon dispersed in the iron and chrome acetate padding liquors. This was a very important development.

It would appear that the carbon would be very readily weathered off because it is used as an insoluble pigment in suspension. If properly dispersed and applied this is not the case. It is possible to remove all the iron and chrome oxide with a 10 per cent boiling hydrochloric acid treatment without removing any of the carbon dipersed in the fabric. The olive drab strips to a gray. Also, the development of the color in boiling alkaline solutions does not remove it. If this happened the addition of the carbon to the padding liquor would be futile. The use of carbon is only possible when it is in a very fine particle size of perhaps one-quarter micron.

Further experimentation has led to production of shades

* Presented at meeting, Piedmont Section, March 6, 1943

that approximate closely the O. D. No. 4 shade used in jungle warfare and the O. D. No. 746 shade. Tests are proceeding and it is hoped that at an early date the dark olive drab No. 7 shade will be produced. These further developments have been made possible by the use of Phthalocyanine Blue which can also be added to the padding liquors. The specification allows an addition of Phthalocyanine Blue or Green along with the carbon as shading agents, and these are the only allowable pigment additions. By a stretch of the imagination, these pigments when used in mineral dyeing are considered to be minerals. When these pigments are added to the chrome and iron acetates, they must be kept in constant agitation during the dyeing. Wetting agents are usually added to the padding liquors.

Mineral dyeing is usually applied to grey goods right out of the bale and without any preparation. The Jeffersonville Depot requirements recognize this with the exception that flat ducks and twills or any duck containing more than 5 per cent size shall be desized before dyeing. Numbered, Army and Tent ducks, being made of plied yarns, are usually woven without sizing the warps.

Preparation of the goods before dyeing will give a better appearance to the finished goods. Preparation with caustic soda will remove the tannin from the motes which otherwise produce black spots due to the formation of iron tannate. Where the grey goods contain many motes, a preparation seems necessary.

Mineral dyeing is a simple process but must be carefully controlled to get good results. Once dyed, it is difficult if not impossible to strip or redye.

After padding through the dye liquors, the material is dried directly on cans and then developed in boiling caustic soda of approximately 5 per cent solution, washed in water to free from alkali and given a repellency treatment. While caustic soda is generally used for development, some plants use sodium carbonate and this is allowed by the specification.

Experienced mineral dyers claim that caustic soda precipitates the chromium more completely than does soda ash. The material is developed on continuous dyeing machines similar to those used for sulfur dyeing or for washing. The boiling 5 per cent caustic soda is usually used in the first three compartments. Hot rinses and then cold rinses follow so that all of the caustic soda is removed.

The pigment must be well fixed and the fabric when torn should not dust out unduly. The finished material must have an ash content of not less than 3½ per cent and the chromium oxide content must be at least twice the iron oxide content.

Mineral dyed materials are always relatively harsh and hard to sew. It is necessary, therefore, to control the quality of the dyeing within limits, so that the material can be fabricated efficiently. It has been found that the lighter-weight materials will contain a higher percentage of ash than the heavier ducks. The variation in ash content is due to the degree of penetration. Some shelter tent ducks have had as high as 6.5 per cent of ash, whereas a heavy duck would average not more than 3.5 per cent.

In order to aid the manufacturer in fabricating equipment, mineral dyed material should be given a fairly heavy wax treatment. This limit has been set in the specification from 3 per cent to 6 per cent. Recently, some mineral-dyed No. 6 duck used for leggings gave difficulty in fabrication. This duck was well dyed and analysis showed an ash content of 3.66 per cent and a wax content, determined by petroleum ether extractions of 0.38 per cent.

The fabricator of leggings, inexperienced with mineral-dyed duck, had just finished with a lot of vat-dyed No. 6 duck, and, naturally, attempted to process the mineral-dyed duck under the same conditions with the sewing machines running at a maximum speed of about 2900 per minute. Suggestions were made that the speed of the machines be cut down to 1500 or 1600 per minute, which is usually done when mineral-dyed fabrics are fabricated. This the manufacturer did not want to do, because of loss of production and dissatisfaction of employees because of a consequent loss of wages. At a speed of 2900, it was determined experimentally that the sewing thread would not sew more than 12″ of the fabric before breaking and at this time the needle was burned.

The same material was then given a wax treatment, adding 5.1 per cent of wax in a solvent solution which caused the wax to penetrate well into the fabric. It then sewed without any difficulty at a speed of 2900 per minute. No difficulty was experienced when this mineral-dyed No. 6 was sewed four thicknesses at one time, which is a condition met with in the manufacture of leggings.

VAT DYEING

In accordance with Specification J. Q. D. No. 226A, the dyeing of duck and tent twill with vat dyes requires that sized goods must be thoroughly desized. The fabrics shall be well scoured with caustic soda or sodium carbonate plus penetrating or wetting agents and/or soap at boiling temperatures so that the scoured material when dried before dyeing shall be as absorbent as a blotting paper and shall wet-out immediately when spotted with a drop of cold water. It is seen that a premium is put on having the goods thoroughly scoured and then dried before dyeing.

The specification requires the use of certain anthraquinone type vat dyes which when properly applied to give good penetration, maximum fastness to weather will be secured. Only the fastest vat dyes combined with the best methods of application is good enough for material procured by the Jeffersonville Depot. This is obvious when the required performance of the dyed material is considered.

A method of dyeing is outlined in the specification as follows: Material lighter than No. 10 duck and not over 56″ in width must be dyed by the pigment-pad method with the vat dyes in an unreduced highly dispersed state.

A high pressure padder must be used. This is followed by a reduction with a minimum of six ends in the jig and then developed in the jig.

Jig dyeing of No. 10 and heavier ducks and lighter ducks over 56″ in width is acceptable, providing good penetration of the dye and an even solid appearance of the dyed cloth is obtained. The thoroughly scoured and dried material must be given four ends in the jig with the dye in an unreduced highly dispersed state. This must be followed by reduction with a minimum of six ends in the jig and then developed in the jigs.

It is to be noted tht the pad-jig method is the favored method for the dyeing of all weights of ducks but limited by the width of the cloth to not over 61″. The specification allows jig dyeing of any fabric which is over 56″ in width.

Shelter tent duck and twill after thorough preparation by scouring may be dyed on jigs, without having to be dried between the preparation and the dyeing. The continuous method of dyeing shelter tent duck is not permissible.

The study of dyed samples indicated that some dyers were dyeing shelter tent duck continuously from the bale in the reduced vat dyebath. This was equally true of dyers processing numbered and Army ducks in jigs. It was believed that no dyer could produce a quality product this way. The penetration was poor and a purely surface dyeing resulted which weathered off or was over 50 per cent removed by scrubbing with soap and alkali. The lack of penetration gave the fabric a poor appearance because the white grinned through and greyed down the surface, which, in turn, lacked solidity and evenness The rolls varied in shade from end to end.

A satisfactory product that showed proper penetration and fastness was not being produced to the degree thought possible. This statement in no way impugns the integrity of the finisher, for many of them did not have any experience in dyeing duck before the war and equipment was not always suitable. Up until about three months ago, no very definite specification for mineral and vat dyeing of duck was available. The need of improved quality dyeing led to the writing of the specification.

Some encouraging results have already been obtained. Further improvement is being sought and this problem should have the attention of the respective plants to the end that our soldiers are the best and most serviceably dressed of any in the world. My prediction is that the wanted improvement will be brought about and the specification will not bar the way to progress. It may require some original thinking and a modification of both our ideas in methods and use of equipment to produce the wanted result.

WATER REPELLENT FINISH

Mineral and vat dyed ducks are given a water repellent finish which is specified to be made with the use of sulfur-free aluminum acetate or formate, wax and soap and/or paraffin wax. The wax emulsions can be applied by one or two bath methods. Mineral dyed material is required to show a minimum hydrostatic resistance when tested on the Suter apparatus, readings to be taken when the third drop of water appears. No. 4 and No. 6 duck are required to have a hydrostatic resistance when tested of 40 cm.; No. 8, 10, 12, duck, 35 cm.; 12.29 oz., 9.85 oz., 7.9 oz., duck and 11.6 oz. twill, 30 cm. The required hydrostatic resistance of vat dyed materials is 5 cm. less in each instance. Both mineral and vat dyed material must show a spray rating of 90 plus when tested in accordance with the A. A. T. C. C. test.

Mineral dyed ducks dyed by the bale contain, in the finished state, considerable cotton wax. This, naturally, aids the repellency of the material. A study is being made at the Jeffersonville Depot to determine the relative efficiency of cotton wax as compared to the repellent materials that are used. It has been found that in sixty to eighty hours under the National Weatherometer grey duck will wet-out within a half minute after a drop of cold water is applied to the material. This, together with a whitening of the color of the fabric, would indicate that all of the cotton wax is removed. Two months' exposure to outdoor weathering has shown an approximate result.

The repellency treatment is sometimes applied at the end of the washing operation. This is especially true in mineral dyeing, the goods without being dried passing through a soap and emulsified wax bath, between squeeze rolls and then into a solution of aluminum acetate, washed and dried. The specification requires three to six per cent of wax and an extra treatment with emulsified wax would be needed in addition to any repellency treatment given continuously.

Material that contains but ¾ per cent of petroleum ether extractable matter may give the repellency desired temporarily, but until more is known about the repellency problem, it is thought that increasing the amount of wax will add to the life of the repellency treatment.

MILDEW AND MILDEWPROOFING

Under favorable conditions all cellulosic fibers and materials when attacked by micro organisms have a tendency to decay. It has been shown that the resistance of cotton, hemp, flax, sisal, and jute in comparable fabrics is about the same.

The chief cause of micro-biological attack for rotting is dampness or high humidity conditions. The decay is caused by both fungi and bacteria and there are many strains of these cellulose decomposing organisms which are common to most soils.

A slow growth of mildew may occur at 75 per cent relative humidity. Most organisms require 85 to 95 per cent relative humidity and when the humidity approaches 100 per cent the development is rapid. *Aspergillus* and *penicillium* predominate, the former favored by warm storage conditions. The safe limit for cotton is not over

8 per cent moisture content.

Mildew will occur in warps which are wound on the beam in a damp condition, or on pieces of goods which are rolled up damp or which become wet or are stored where the humidity is high. It is easy to grow mold if a piece of material is left on the floor of a damp cellar or vault, or if it is buried under a stone in a damp corner of the garden.

An interesting article "The Rotproofing of Sandbags" by E. F. Armstrong appeared in "Chemistry and Industry" Vol. LX, No. 37, of September 13, 1941, pp. 668-674.

The suggested properties that a fungicide should possess are given in this paper as follows:

A protective treatment must have both fungicidal and bactericidal properties. Many substances have one of these properties but not both.

Other factors which have to be taken into consideration when materials are exposed to all weathers in the open are the rate of leaching out of the fungicide by rain, volatilization of the fungicide, the photochemical action of sunlight on either the fungicide which caused its decomposition or on the fiber causing its oxidation, this action being accelerated by the catalytic action of the fungicide.

It is also desirable that a fungicide should be neither acidic nor alkaline, it must be only slightly soluble in water. In application, it should penetrate the material being treated and be capable of uniform application in and on the fiber, so that every individual fiber or part thereof should be protected. While slight solubility is good, any tendency toward rapid leaching out by rain and water renders the fungicide useless. The fungicide should neither be poisonous to human beings nor cause dermatitis to those working with it. It must not materially detract from fiber strength or fiber qualities on application or subsequent exposure. It must be reasonably cheap, readily available, and easily applied, and should be capable of application in the cold. It should dry quickly, be free from stiffness, undue oiliness when dry, and have no pronounced objectionable odor.

The cause of deterioration of fabrics under weathering or rotting conditions is due to the attack by micro-organisms, attack by chemicals, and by degradation by sunlight. Just what proportion of the deterioration is due to each one of these causes is not known.

It has been stated by Armstrong that the time of decay of samples of untreated jute fabric buried in garden soil in the open varies from eighty-two days in winter to twenty-one days in summer. The rotting times are proportionate to soil temperatures, the soil moisture is nearly always sufficient for micro-biological attack. Unproofed jute bags deteriorated in revetments in three or four weeks exposure with the maximum life of three months; proofed bags, piled to considerable height, resist eighteen months exposure.

The action of micro-biological organisms on vegetable fibers is a process of hydrolysis, the products of which are soluble and are removed by subsequent wetting. Acetylation of cotton reduces this hydrolysis of fiber. Tests were carried out at Jeffersonville on four different constructions of cotton lace and on one of cellulose acetate. In fourteen days soil burial, the four cotton fabrics were 100 per cent destroyed and could not be removed from the earth. For all practical purposes, they were destroyed in eight days. The acetate netting lost 50 per cent of its tensile strength in fourteen days and 68 per cent in twenty-one days.

Some fungicides are listed: Phenolic compounds and derivatives which would include, orthophenylphenol, 2-chlororthophenylphenol, tetrachlorphenol, pentachlorphenol, salicylanilide, tetrabrom-ortho-cresol, 2, 4, diamylphenol, 2,2′ dihydroxy-5,5′ dichlor-diphenylmethane, benzylated chlorphenol. Metal soaps including the oleates, stearates, naphthenates, and tallates of copper, zinc and perhaps cadmium. Cuprammonium hydroxide, cpurammonium fluoride, zinc dimethyl or zinc diethyldithiocarbamate, copper chromate, cadmium borate. Mercury derivatives including phenyl mercuric acetate, phenyl mercuric oleate, phenyl mercuro-2,2′,2″ nitrilotriethanol-lactate, 9-phenylmercuro-10-acetoxy-12-octadecenoic acid. Tetra-alkyl-quaternary ammonium halide, cetyl-pyridinium chloride, aminoguaiacol benzothiazole iminourea.

This list of fungicides does not include all that may have been mentioned. All on the list may be useful, but some may prove to be better germicides than fungicides. Some will undoubtedly prove to be failures.

Fungicides may be applied in a variety of ways:—

a. From a non-aqueous solvent solution. In this method light hydrocarbon solvents are used. Water repellents or plasticizers may be applied simultaneously. Care must be taken to remove solvent vapors and thus guard against fire and toxicity hazards.

b. In the form of an emulsion along with water repellent materials. Here, the fungicide is actually in suspension. The fungicide will leach out when the water repellent is removed and this is not a good method.

c. As an emulsion with one-bath repellency material and using a solvent like pine oil that will dissolve the fungicide. In theory, at least, the fungicide is dissolved in the solvent and follows this phase of the solution. It is important to remove all of the solvent during drying or crystallization (blooming) of the fungicide will result on the surface of the material.

d. With a one-bath repellency material using resins or other plasticizers. Pentachlorphenol is plasticized and crystallization prevented by most resins and non-volatile organic solvents.

e. In the form of the ammonium salt, followed by drying with heat or as the sodium salt followed by an acid bath. This is a two-bath method that can best be used in conjunction with a water repellent treatment.

In this method, the sodium or ammonium salt of the inhibitor is added to an emulsion of paraffin wax and perhaps stearic acid softener. The material is padded

through this, can-dried, passed into cold aluminum acetate with sufficient acetate acid in excess to neutralize the sodium salt, washed in water and again can-dried.

Satisfactory applications on Army duck using orthophenylphenol, pentachlorphenol and dihydroxydichlordiphenylmethane have been carried out in this manner. Though more expensive and more troublesome it is undoubtedly the best method.

Copper, while critical now, is plentiful, toxic to microorganisms and entirely satisfactory for many purposes. It is universally accepted as an efficient inhibitor for use in sand bags, rope, cord, and camouflage nettings. It is usually used as the organic copper salt. The only suitable acids are those of high molecular weight and these should not be so highly unsaturated as to be liable to oxidation. In practice, the oleate, stearate, tallate and naphthenate come into consideration. The naphthenate is most important.

Basic copper carbonate, cuprous oxide, or cupric oxide when used in the 746 finish to the equivalent of 0.5 per cent copper on the weight of the finished duck, did not protect when submitted to a fourteen day soil burial. Copper oleate on the basis of 0.5 per cent copper gave complete protection. These tests made simultaneously were rather startling as it was thought that copper would be effective in any form if present in sufficient amount.

As a result of work done at the U. S. Department of Agriculture some years ago, it was concluded that 0.11 per cent of copper, if present, would give protection. Results of study at the Jeffersonville Depot, since checked independently by an outside laboratory, show that copper oleate equivalent to 0.2 per cent copper on the weight of the finished fabric allowed a tensile strength loss of 45 per cent on fourteen day soil burial.

When the amount of copper oleate was increased so that 0.3 per cent copper was present, no loss in a fourteen day soil burial was encountered. This is in line with what has been learned in the work with sandbags in England where a minimum value of 0.35 per cent copper on the weight of the material was found to prevent micro-biological action in outdoor exposure in any unit of time. A certain amount of copper is lost by leaching. This has been estimated in the case of sandbags to be about 0.06 per cent per month. An initial figure of 1 per cent copper is regarded as desirable, but 0.8 per cent has beeen acceptable for sandbags. Bags so proofed last eighteen months to two years. Proofing with 0.5 per cent of copper for sandbags will not be permanent enough to give maximum life. For less drastic requirements than sandbags, 0.5 per cent copper is considered sufficient.

When proofing with cuprammonium, a range from 1 to 1½ per cent copper is desirable, and there is some evidence that the life of the material increases with increasing copper up to 2 per cent. The disadvantage of the cuprammonium process, when used for the Willesden finish, is that it produces a slippery finish which is hard to fabricate and also because the copper oxide which dusts out when being sewed, can be toxic.

Cutch browns have been recommended as being good in resisting fungicidal attack. In the opinion of the speaker, this is not a property of the cutch but rather of the copper which has been used in the dyeing and is present. Usually 1 per cent copper sulfate is used in dyeing cutch browns on cotton.

A number of metal dithiocarbamates have value as insecticides and fungicides. The alkyl derivatives, zinc dimethyl and zinc diethyldithiocarbamates appear to offer the greatest promise in this field. Zinc dimethyldithiocarbamate has the best possiblities. It is a white compound, has no odor, is non-toxic, insoluble in water and gasoline, soluble in dilute caustic soda, carbon disulfide, benzol, chloroform. Its melting point is 248-250°C.

Cadmium has been suggested as a fungicide and claims have been made that it is more efficient than copper. Patents have been issued claiming its use as a fungicide. Cadmium soaps have been compared with those of zinc and copper. As a result of soil burial tests, it is quite evident that cadmium is not only inferior to copper but is also inferior to zinc. This was proved in a further test where cadmium naphthenate was compared with the naphthenate soaps of other metals including zinc and copper. Here too, the results indicate that cadmium is inferior to zinc and very much less efficient than copper. The general consensus of opinion of those who have studied this subject, appears to be that cadmium soaps are less efficient than zinc soaps. Zinc soaps are usually rated as having one-half the fungicidal power of copper soaps.

Another factor, which is very important to bear in mind, is the lack of availability of cadmium due to heavy war demands. The use of cadmium soaps as fungicides appears to be inadvisable; first, because of the technical inferiority of the soaps compared to zinc, and, secondly, from the standpoint of supply.

Silver exerts toxic action on the lower forms of life to a very marked degree, probably more so than any other element. Inorganic and organic compounds of silver possess medicinal properties. By analogy, these same compounds are suggested for use as possible fungicides. Experimental work comparing the toxicity of silver with that of other metal poisons is very meager.

That silver is toxic to certain fungi in very dilute concentrations has been demonstrated by growing *Aspergillus niger* in a liquid medium in silver dishes. Fungus growth in these cases was subonrmal in comparison with similar cultures grown in glass dishes. The toxicity observed is undoubtedly due to the dissolved silver ions.

All silver compounds are not toxic to fungi. This toxicity is presumably due to the presence of free silver cations, therefore, one might expect those compounds which are very insoluble to be non-toxic or only slightly

toxic. *Aspergillus niger* will grow normally in nutrient solutions containing silver protein compounds like Argyrol.

Those silver compounds which inhibit spore germinations are salts which produce the highest silver concentration in a water solution. Some fungi are inhibited by a concentration of 12½ parts per million of silver. Others require a concentration of 100 parts per million. In a number of reported experiments, silver was found to be less toxic than mercury, but more toxic than copper. Work has been carried out at Jeffersonville with silver as a fungicide. So far, this has not been too encouraging. It is expected that silver palmitate, stearate, or naphthenate will give the best indication of the fungicidal efficiency of silver. While silver is non-critical, it may be that its cost will make its use prohibitive.

In the organo-mercurials the anion of the organic compound is substituted by an aromatic radical such as the phenyl group. It has been definitely established, as evidenced in chemical literature, that phenyl mercury compounds are very powerful fungicides. Consequently, to be effective, they are necessary only in minute quantities. They do not ionize while the inorganic mercury compounds do ionize and are soluble. By substituting the inorganic anion with the phenyl group, the compound becomes only slightly soluble in water. In this form, except by application from solvent solution, it is difficult to apply.

Phenyl mercury acetate is the starting point of the manufacture of all other phenyl mercury compounds. It reacts with most of the higher fatty acids such as oleic, stearic, linoleic, etc., to give the corresponding phenyl mercury soaps. The soaps, in general, show much higher oil solubility than phenyl mercury acetate which is comparatively insoluble in such solvents as mineral spirits.

Phenyl mercury acetate is soluble in water in room temperatures to the extent of six (6) parts per 1,000 and approximately 25 parts per 1,000 at 100°C. The best solvent yet found for dissolving it is the monomethyl ether of diethylene glycol. Crystalline phenyl mercuric acetate is not readily wet by water, and it is therefore desirable to add the solid to hot water rather than adding it to cold water and then heating it. Monomethyl ether of diethyleneglycol will dissolve 10 per cent of phenyl mercury acetate at room temperature and approximately 80 per cent at 100°C. An addition of acetate acid increases the solubility in water. Phenyl mercury acetate is readily soluble in dilute caustic soda producing phenyl mercuric hydroxide. The acetate will be reprecipitated with acid. The borate, phthalate, chloride and salicylate have been prepared.

Phenyl mercury oleate is put on the market as a 10 per cent solution in mineral spirits for solvent application and in 10 per cent solution which contains an emulsifier and is capable of being applied in emulsion form in aqueous solution.

Phenyl-mercuro-2,2′,2″ nitrilotriethanol lactate is a quaternary addition product which is soluble in water in all proportions. It is claimed that this material has an affinity for the cotton fiber and is converted by heat on the dry cans to an insoluble compound. An application of this material is now being made on Army duck, using 0.5 per cent on the finished weight of the duck. This is the first practical application to Army duck.

An insoluble in water mercurial, 9-phenylmercuro, 10 acetoxy, 12 octadecenoic acid, is available for use in solvent solution.

The first real use of mildew inhibitors on Army ducks dates back to August of last year when orthophenylphenol was chosen as a fungicide to treat the duck to be used for Jungle Packs and pentachlorphenol for the fire resistant 746 finish on duck. These products were considered safe and non-toxic for these purposes and experience has verified this belief.

Within the last month, and for the first time on Army duck, an application of dihydroxy-dichlor-diphenylmethane has been made on a practical scale. It is believed that this is the first application of this fungicide ever to be made.

2,2′ dihydroxy 5 5′ dichlor-diphenylemethane is a symmetrical condensation product of formaldehyde and parachlorphenol. It has a melting point of 177-178°C., is soluble in alcohols and ketones and can be readily solubilized with alkalies. It has a low solubility in mineral spirits but is readily soluble in butyl alcohol, isopropyl alcohol and acetone.

The chlorination of phenols increases fungicidal power, makes the compound more acid and more toxic. Pentachlorphenol is a most effective fungicide. It has a very low solubility, about 17 p.p.m. in water at 25° C., a freezing point of 179.5 to 182°C., which is high, has little odor and is about the lowest priced phenolic fungicide on the market. Introduction of the chlorine into the molecule has made this compound acid enough to dissolve in sodium carbonate. Orthophenylphenol is not soluble in sodium carbonate. Cloth treated with pentachlorphenol would test about 4.7 pH.

In its concentrated form, pentachlorphenol has to be handled with care. The same is true of caustic soda which is so widely used. Pentachlorphenol has been used as a fungicide in the fire, water, and weather resistant 746 finish since last September on the basis of 1 per cent on the finished weight of the coated fabric. Claims have been made that pentachlorphenol is toxic but no dermatitis difficulties have been encountered in tent shops handling this treated material. Likewise, in the coating plants there does not appear to be any difficulty with toxicity in the use of pentachlorphenol.

It has also been claimed that pentachlorphenol is affected by ultra violet light which not only destroys it, but brings about a tendering action of the cellulose due to the liberation of hydrochloric acid. It is possible that pentachlor-

(Continued on page P226)

A PORTION OF THE GROUP ATTENDING THE JOINT MEETING APRIL 16th

JOINT MEETING

New York Section—General Business Meeting

THE regular monthly meeting of the New York Section and the general business meeting of the National Association were held on Friday evening, April 16th, 1943, at the Downtown Athletic Club, New York City. Thomas R. Smith, national president, presided.

Following the introduction of guests at the speakers' table by Emmett Driscoll, chairman of the technical program committee for the New York Section, Dr. H. C. Chapin, national secretary, presented his report. This was followed by reports from the treasurer and secretary of the New York Section.

Henry F. Herrmann next presented the report of the nominating committee of the New York Section. The following were placed in nomination:

Chairman—Patrick J. Kennedy.

Vice-Chairman—Emmett Driscoll.

Secretary—Norman A. Johnson.

Treasurer—Edward H. Schmidt.

Councilors—Kenneth H. Barnard, J. Robert Bonnar, J. Ernest Meili, George A. Moran.

Sectional Committee—George L. Baxter, Harry R. Tisdale, Major H. W. Stiegler, Ephraim Freedman.

These selections were unanimously elected.

An unusual feature of the meeting was the presence of every living past chairman of the New York Section. They were introduced by P. J. Wood as follows:

Mr. Wood: "It has fallen to my lot to give a short dissertation on some of the more important chemical elements which have entered into the composition of that chemical aggregate known as A_2TC_2. Their atomic weights vary from 120 to 241, *stripped*. They find their places in, or maybe I should say at, the periodic table, and some of them have occasionally been found under it (laughter).

"The degree of activity of these elements varies, but one property they have in common. They all absorb oxygen and give off CO_2 and H_2O. And, in varying proportions, they emit large volumes of hot air (laughter).

"Without exception, they are multivalent, for it will be remembered that the action of at least two other elements is required to allow them to enter into the reaction—namely, the proposer and the seconder. By catalytic action they form smaller aggregates from the other elements forming the larger aggregate A_2TC_2, having the general form $COM_2IT_2E_2$, or committees. These committees stimulate the activities of other elements entering into the composition of A_2TC_2.

"In this series of elements there are two having the symbol PJ. These are not identical but may be isotopes. The group may be likened more or less to a wetting agent, as it is a long chain compound containing two groups, one small one, having an affinity for water, and a large one, having an affinity for alcohol (laughter).

"Just a few words by way of reminiscence. It is just 20 years ago since the New York Section was founded. It was organized by one of our past chairmen (E. H. Killheffer), and there were 55 members present. The meeting started at the Hotel Pennsylvania. Where it ended, nobody knows. One might possibly follow again the chemical analogy and say that it had a very indefinite end-point.

"I would just like to mention a few outstanding things about these men who have contributed so much to the success of the association, and I speak in all modesty. One of our past chairmen (Samuel L. Hayes), has served as chairman of two sections—this section and the Piedmont Section. I venture to say that is a distinction that is shared by no other member of the association.

"It is probably also true that the New York Section has provided more toastmasters for annual conventions than any other section. One of our past chairmen (Louis S. Zisman), had the honor of greeting the International Textile Chemists when they came over from every part of Europe. Two of our past chairmen have served as National President (E. H. Killheffer and P. J. Wood).

"Under the guidance of these men the membership has risen from that modest number of 55 to over 700. I am going to ask them to stand up in the reverse order of their office."

The following past chairmen were present: Patrick J. Kennedy (chairman for 1942-43 and chairman elect), Harry F. Tisdale, J. Ernest Meili, Louis S. Zisman, George L. Baxter, Ephraim Freedman, Henry F. Herrmann, Robert Gaede, Samuel L. Hayes, Daniel P. Knowland, Herbert Grandage, E. H. Killheffer and P. J. Wood.

Lt. Colonel Frank M. Steadman, of the Philadelphia Quartermaster Depot, was the speaker of the evening and presented an informative paper entitled "Development and Research in the Q. M. C." This will be published in the Proceedings in the near future.

There were many members of other sections present at the meeting, including members of the council and research committee, which met the following day in New York City.

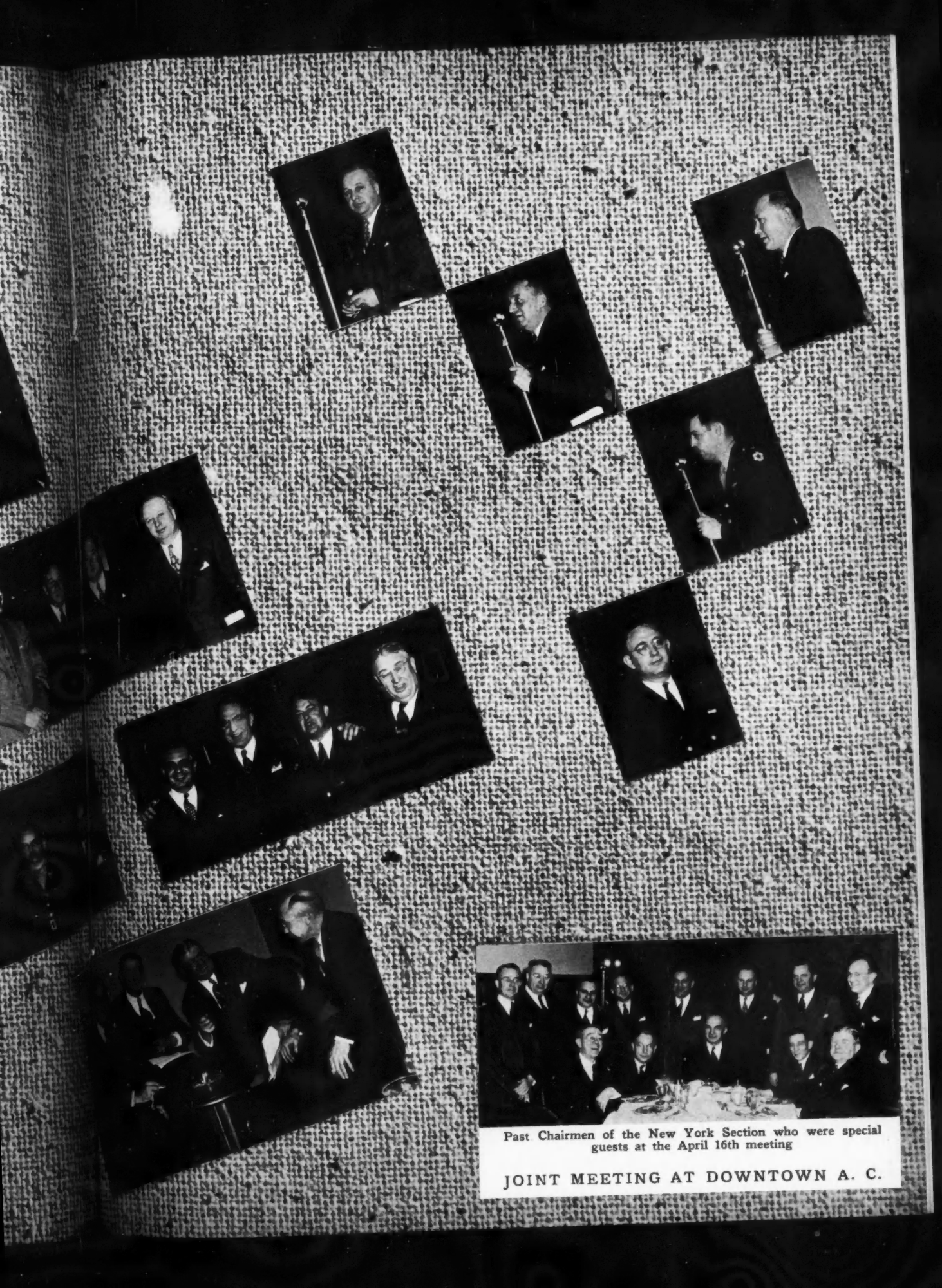
It was announced that the May meeting and the June outing would not be held.

Respectfully submitted,

Norman A. Johnson,
Secretary.

Informal photographs taken at the joint meeting appear on the two following pages.

A PORTION OF THE GROUP ATTENDING THE JOINT MEETING APRIL 16th



Past Chairmen of the New York Section who were special guests at the April 16th meeting

JOINT MEETING AT DOWNTOWN A. C.

WHAT THE CONSUMER SEEKS

from the Textile Manufacturer*

L. C. PFEIFLE

Sears, Roebuck & Co.

I CAN sincerely say that I welcome the opportunity to come from New York to talk to you and with you, on a subject that is very close to the heart of every responsible merchant.

We, as merchants, can only progress and prosper if we put before the American consumer the type of merchandise that will insure them complete satisfaction for the purpose for which it is to be used. The dominant factor in achieving this goal is quality, and we would be derelict in our duty to our customers and to the American public, if we were not conscious at all times of the many factors that create quality, regardless of selling price.

You people have contributed a great deal, during the course of the last 20 years particularly, to the development of quality merchandise, and since your interest is in textiles I will confine my remarks to this field, even though quality is just as effective and necessary in all types of consumer goods, and, from our vast experience in dealing with the American public in all sections of this great country, I will try to give to you our interpretation of what the American customer expects when we speak of "quality."

Briefly, in textiles, particularly as it applies to wearing apparel, we believe the customer wants:

1. Eye value, or good appearance, which includes beauty and attractive finish, and a good "feel" to hand.
2. Ease of laundering.
3. Control of shrinkage.
4. Fast color.
5. Good tensile strength, which means good wearing quality.

All these combined must lead up to wearability and satisfactory service.

Long years of experience have taught the customer just what to expect in our age-old fabrics in the woolen family, in the cotton family, in the silk family and in the linen family, and they can determine these basic factors inherently and quickly. In the new synthetic field, however, which is growing in importance every year and is being accelerated in its importance during these war years, the customer expects and demands the same standards of durability, plus the added attractiveness which, to date, she has not been fully able to secure.

She knows the deficiencies of the older textiles. She has learned that cotton flannel fabrics will afford her warmth and softness, but that the tensile strength in the width of the goods is limited, because the soft filling threads are weakened by the wires of the napping machine.

She knows that denim fabrics are very strong lengthwise, but much weaker widthwise, due to the traditionally unbalanced construction. She knows that denims are dyed with indigo colors and that the fabric loses its color rapidly, when subjected to improper progressive washings.

She is aware of the shifting of yarns in her marquisette curtains, when roughly handled in laundering.

She has learned that the wool flannel or crepe skirt cannot be laundered without excessive shrinkage and loss of color.

These, and many other deficiencies in the natural fiber fabrics, she has accepted, only because improved fabrics for the same particular service were not available to her.

Consumer demands are in a continuous state of evolution. Great progress has been made from the accepted standards of 20 years ago. The evolution since the period of the last war has been startling. The technical end of the textile business has accounted for constant scientific improvement. We have seen the development of an American dye industry that has brought us to the point where the consumer takes as a matter of course, fast-colored percales, impervious to washing, light or heat.

The advent of Sanforization established new standards in shrinkage of fabrics in laundering.

In the great field of synthetic fabrics, there is a challenge to the technicians and the chemists to bring before the American public, fabrics that enhance the beauties and the wearability of all the natural fabrics, without the deficiencies of the natural fabrics.

The field is unlimited and the great rayon yarn companies are literally spending millions of dollars in their laboratories and research for the development of new usages of rayon yarns, to meet the ever-increasing demand of quality, on the part of the consumer.

The high standards of living that we enjoy in this country have made our people quality-minded, and they would no more accept now the automobile of 1920, the icebox of 1920, or the crystal radio set of 1920, than they would accept the inferior materials in the synthetic textile field of that era. They constantly strive for and demand better

*Presented at meeting, Mid-West Section, February 6, 1943.

quality and improvement in their textiles, as they do in their mechanical requirements.

In the natural course of events, these improvements will come with great speed in the synthetic fabric field. Today, we find in many of the standard rayon fabrics, unbalanced construction, where they have followed the tradition of the natural fiber fabrics. As a specific but interesting case—it has always been accepted that rayon lining fabrics are constructed so that the main strength is lengthwise, and the widthwise strength is much weaker. This construction was established on the assumption that the wear in linings is up and down, in the direction of the warp. Recent experiments by the Government, however, determined that actually the wear is from side to side—a simple matter, after it has been discovered, necessitating only a change in construction to strengthen the filling yarns, to insure much longer wear.

Some of the main deficiencies that we, as merchants, recognize in the synthetic fabrics available to us, are:

1. Shifting of the yarns in laundering.
2. Slippage at the seams.
3. Weakness when wet.
4. Excessive shrinkage in washing.
5. Non-fast colors.
6. Inability to wash at a temperature of 160° Fahrenheit.
7. Inability to use strong family soap solutions in laundering.

In the spun rayon field, we are confronted with bagginess, sagging, and excessive wrinkling.

All these factors are a challenge to technicians, as well as a challenge to manufacturers to overcome.

It is difficult for the merchant to be so careful in the selection of the proper synthetic fabrics for our particular use, to be sure he is getting the best fabric for that particular commodity. With viscose, acetates, nylon, high-tenacity rayons, casein yarns, Vinyon yarns and others, as well as the new soy bean fibers, there is little wonder that today we face these problems with confusion as to which should be used for the best advantage, in any particular garment. This is where the technical field can be of great assistance in instructing and working with the merchant, to help him put before his customers the proper fabric for the proper commodity.

All these synthetics are new and without the tradition of experience or performance behind them of actual customer usage.

We have struggled to bring before our customers the best woman's slip that could be made of a rayon fabric that would insure beauty, wearability, fit and workmanship. Our experiments on this apparently simple problem extended over a period of two years. We had to find the best type of rayon yarn for the warp and for the filling. We had to find the best balanced construction for wearability. The yarns we were to use would have to drape softly and launder innumerable times. We had to avoid slippage at the seams and shifting of the fabric. What success we may have achieved, when we finally were able to bring this particular slip before the American public, must be credited to the technicians in the laboratories of one of the rayon producers who accepted our challenge and worked diligently to conquer our problem.

This progress could not have been made, if we depended wholly upon the manufacturing industry to present to us this kind of thinking. Most of the cutting-up trade devote far too much of their effort to commercializing their products, before they are properly prepared for consumer usage. I do not say this as a reflection on the manufacturers, because we have many outstanding, splendid manufacturers in this country, but they are prone to accept fabrics from the converters that have not been as carefully thought out as they should, for the purpose for which they will be ultimately used.

For example, some types of synthetic fibers were made up into fabrics before the proper dyeing of the yarn was practical. It is an error to commercialize new synthetics in a premature state, and for a purpose for which they were not intended.

Nylon for hosiery was tremendously effective and would out-wear natural silk to a great degree, but because it was highly promoted for hosiery, it may have been adopted for other fields for which it was not ready. I am confident, however, that at the end of this war, nylon yarns will be of tremendous value in many fields, and the experience the mill's technicians have gained in the laboratories, will give us a far superior nylon product for general usage. Much will be done to assure the consumer of scientific, factual determination of the proper quality, before it is offered to her as a finished product.

I can say to you that what the consumer wants is good, honest merchandise, worthy of the money they spend, with all the experimenting being done in the laboratories, instead of on the consumer. Their complaints are because of your failure to do the proper job, before the goods are offered to them.

We spend, as merchants, a great deal of money in informative tags and instructions telling our customers what certain merchandise will *not* do. Can you show us how rayon fabrics can be washed and handled without worrying about temperature of water, strong soap solutions, excessive shrinkage, bleeding colors? It will be done, and you are the people who must do it. The merchant knows it, but is not equipped by technical training to accomplish it.

We, as merchants, accept our responsibility to our customers and try to avoid offering merchandise that will not fully do the job that the consumer expects, before that merchandise is ready to be offered to them, solely under the pressure of competition, and conquer the lust in the hearts of most American distributors to be first with something new, before it is quite ready for public usage.

The Finishing of Army Ducks—

(Continued from page P219)

phenol is affected by ultra violet light, but there is no concrete evidence available that would prove that hydrochloric acid is liberated. In studying this problem, it has been found that an eight hour exposure under ultra violet light will utterly destroy cotton sheeting, and there was no apparent difference in the result whether the pentachlorphenol was present or not.

Some of the phenolic compounds are volatile in steam which leads to a loss of fungicide in application. In the very first experimental run made with orthophenylphenol it was desired to fix one percent of this fungicide along with a water repellent finish by the two-bath method. There was little experience to guide us. On the basis of the expected pick-up in the padding about 1.5 per cent orthophenylphenol was used and should have been fixed on the fiber. Analysis of the finished duck showed that 1.06 per cent orthophenylphenol had been fixed. The loss occurred on the dry cans, in neutralizing the sodium salt and from a hot water wash given after the aluminum acetate. Later, it was desired to fix 2 per cent of orthophenylphenol on the finished weight of the fabric. Over 2½ per cent orthophenylphenol would have been fixed according to the amount used in the padding liquor, but analysis showed that only 1.75 per cent had been fixed. The loss is due to the low vapor pressure of orthophenylphenol.

The experience with pentachlorphenol has been much better. Recently, it was desired to fix 1 per cent of pentachlorphenol on cotton duck along with a water repellent finish. Applying the experience gained with orthophenylphenol, the finisher used an amount of pentachlorphenol that would have fixed 1.35 per cent of pentachlorphenol on the fiber. Test of the finished material showed that the fiber had retained 1.25 per cent pentachlorphenol.

Crystallization on the surface of the material has been encountered in applying orthophenylphenol and pentachlorphenol from aqueous and solvent solutions. Pentachlorphenol is especially likely to crystallize. This is a condition that must be avoided because of the irritation that ensues in the handling or wearing of the fabric. Material showing crystallization on the surface is unusable.

In a recent application, pentachlorphenol was padded on as the sodium salt along with emulsified waxes, dried on cans, passed through cold aluminum acetate, washed in water, and dried. Pentachlorphenol in the amount of 1.25 per cent was fixed in the duck. The wax content was about 5 per cent. No signs of crystallization was apparent until the material was ready for shipment on the day following the finishing, when the surfce was observed to be covered with fine crystals of pentachlorphenol.

In experimenting with this material, the finisher passed it over hot drying cans and the crystallization disappeared and did not reappear again on standing. Analysis for pentachlorphenol content showed no loss due to the extra drying. It is quite apparent that pentachlorphenol was plasticized by the wax under the influence of the heat of the dry cans which had dried the material to a bone dry condition. By following the idea of complete and thorough drying, the lot of duck was satisfactorily finished. This is the first successful application of pentachlorphenol to a vat-dyed army duck in the experience of the speaker.

The manufacturer of dihydroxy-dichlor-diphenylmethane claims that this material will not crystallize when applied to duck, and as it is not volatile in steam, it is not lost in the drying operations. Two per cent of this product has been successfully applied to duck along with a water repellent treatment by the two-bath method. Tests are under way to determine what the fungicidal efficiency of this product is, and what percentage should be used to give protection to duck exposed to the soil burial test.

It is believed that the two-bath method of applying orthophenylphenol in conjunction with aluminum acetate is the best possible method of applying this fungicide. Aluminum orthophenylphenate is formed and this is more insoluble than orthophenylphenol. Pentachlorphenol forms an aluminum salt but this hydrolyzes instantly. Dihydroxy-dichlor-diphenylmethane does not form an aluminum salt.

The mercury, silver and lead salts of pentachlorphenol are the only metallic pentachlorphenates which are more insoluble in water than pentachlorphenol itself. Copper pentachlorphenate would be a most desirable salt as a mildew inhibitor. The metallic pentachlorphenates can be formed on the fiber by double decomposition with the sodium salt in a two-bath method.

The ammonium salt of pentachlorphenol is soluble only to the extent of 1 per cent in boiling water. If ammonium pentachlorphenate was more soluble in water, an easy application would be available in that the ammonia salt could be padded on the goods and given a passage over the dry cans. The ammonia would be volatilized and the pentachlorphenol fixed in the fiber. This form of application through the ammonium salt has been used for the application of salicylanilide. Used with a water repellent, this is the best method for the application of this inhibitor.

The hydrostatic resistance and spray rating of water repellent fabrics in which orthophenylphenol has been used as an inhibitor are lowered. The hydrostatic resistance of duck tested on the Suter machine is lowered by at least 5 cm. when orthophenylphenol is present. Pentachlorphenol does not seem to exert such influence. Dihydroxy-dichlor-diphenylmethane acts in similar manner to orthophenylphenol.

Toxicity studies are progressing at the National Institute of Health, Bethesda, Md. Toxicity and skin irritation tests are carried as follows: Small patches of the treated fabric are taped over the instep or to the underarm; one patch of each material taped loosely, dry, and

the other taped over, moist. Any skin irritation will be observed as reddening, itching or an extreme case of burning and blistering. It will be realized, of course, that any small scale testing is not conclusive, due to individual allergies and sensitivities.

Time does not permit discussion of the methods used for evaluating the efficiency of any mildewproofing treatment. Accelerated mildew or soil burial tests are used or the fungicide is determined quantitatively by chemical methods. Leaching tests are used to simulate field conditions. Pure cultures for biological tests may be obtained from the Bureau of Plant Industry, Department of Agriculture, Washington, D. C.

The mention of individual compounds or classes of compounds does not imply approval or endorsement by the U. S. Army, Quartermaster Corps.

JUNE 5TH MEETING, PIEDMONT SECTION

THE next meeting of the Piedmont section will be held at the Robert E. Lee Hotel in Winston-Salem, North Carolina, on June 5. Previous announcements stated that this meeting would be held in Greensboro, North Carolina. It was necessary to change the meeting place due to the overcrowded hotel conditions in Greensboro.

Hotel reservations for the June 5 meeting in Winston-Salem should be sent direct to the hotel as early as possible to insure accommodations.

Technical papers will be presented and discussed from 3 till 5 o'clock P. M. Ernest Caswell, superintendent of dyeing, Cloverdale Dye Works, High Point, North Carolina, will present a paper and preside during the discussion of, "Hosiery Dyeing, Ingrain and Piece."

John Neely, superintendent, Burlington Mills Yarn Dyeing Division, Burlington, North Carolina, will lead the discussion on, "The Dyeing and Finishing of Government Fabrics composed of Rayon, Nylon, and Acetate."

Sidney M. Cone, Proximity Manufacturing Company, Greensboro, North Carolina, will preside over the discussion of, "The Dyeing and Finishing of Cotton Piece Goods for the Government."

Members are invited to send in advance any specific questions they may wish discussed on any of the subjects mentioned above. Address your questions to the discussion leaders mentioned above as early as possible.

The usual banquet is scheduled for 7:30 o'clock P. M. Banquet reservations should be made in advance to enable the hotel to make proper provisions for food and service. The banquet speaker will be announced later.

The committee in charge of arrangements for this meeting is: Sidney M. Cone, Chairman, J. T. McGregor, John B. Neely, Henry B. Dixon, Ernest L. Caswell and R. H. Souther.

The Piedmont Section is not sponsoring a golf tournament for this meeting, but any members or guests desiring to play golf can make arrangements through the Robert E. Lee Hotel to play at one of the three beautiful golf courses in and around Winston-Salem (green fees $2.00).

INTERSECTIONAL CONTEST

IN compliance with the restrictions on traveling imposed by the Office of Defense Transportation, the Council has again voted to abandon its plans for an Annual Meeting for this year. Nevertheless, the demand for the continuation of the Intersectional Technical Contest has been so insistent that this event will be held. The papers contributed by the eight sections of the Association will be presented at a Fall Meeting of the New York Section, the date of which will be announced later.

Two innovations will be made in the judging of the papers. In the first place, the judges will receive copies of each contest paper a month in advance, so that they will be in a better position to judge the value of each section's contribution, than was formerly the case. Under the old routine, the judges heard the papers for the first time during their official presentation, and it was decided that proper judging of eight valuable technical treatises was almost impossible at such short notice. The second innovation is that the scale of judging has been shifted to place more emphasis on the practical value of the various papers to our industry. In the coming contest, the judges will allow 30 per cent for the paper's practical value; 30 per cent for its purely scientific value; 30 per cent for its originality, and an allowance of only 10 per cent for the quality of its presentation.

As usual the papers will be published in the official proceedings of the Association. Such publication will follow as soon after their presentation as is feasible. The benefits to the Association from this Intersectional Contest cannot be questioned. The substance of the scientific matter which has been presented in these contest papers occupies the foremost place in the record of scientific contributions of the Association.

MEMBERSHIP APPLICATIONS

Senior

Agostino Brambani—Foreman Dyer, Walter E. Knipes & Sons, Philadelphia, Pa. Sponsors: M. G. Campbell, Jr., E. E. Rettberg, Jr.

Edwin A. Briggs—Supt. of Dyeing, Southern Franklin Process Co., Greenville, S. C. Sponsors: C. N. Rabold, H. H. Field.

Robert Gibson—Dyer, S. & M. Dyehouse, Philadelphia, Pa. Sponsors: J. R. Senior, A. E. Koch.

Julius Hermes—Boss Dyer, Fontaine Converting Works, Martinsville, Va. Sponsors: T. R. Smith, B. S. Bellemere.

Herman Hutten—Textile Chemist, Fontaine Converting Works, Martinsville, Va. Sponsors: T. R. Smith, B. S. Bellemere.

Julian S. Jacobs—Editor, "Textile Research," Textile Research Institute, New York, N. Y. Sponsors: W. D. Appel, W. W. Chase.

Theodore Kapala—Chemist, Quartermaster Depot, Philadelphia, Pa. Sponsors: F. T. Simon, E. W. Peters.

Charles George Lederer—Colorist and Salesman, Carbic Color and Chemical Co., New York, N. Y. Sponsors: H. G. Zeil, E. A. Lutz.

Richard M. Locke—Textile Chemist & Colorist, Research Div., General Aniline & Film Corp., Easton, Pa. Sponsors: J. R. Bonnar, C. Z. Draves.

Walter Franklin Longcrier, Jr.—Asst. Manager, Southern Franklin Process Co., Greenville, S. C. Sponsors: C. N. Rabold, H. H. Field.

George E. Martin—Textile Inspector, Quartermaster Depot, Philadelphia, Pa. Sponsors: E. W. Peters, F. T. Simon.

Raymond F. Merman—Supt. of Dyeing, John Zimmerman & Sons Co., Philadelphia, Pa. Sponsors: D. L. Bockius, J. W. Farquhar.

Harold J. Meyer—Laboratory Director, Thurston Cutting Corp., New York, N. Y. Sponsors: J. Hoye, J. J. McDonald.

Frank I. Pendleton—Overseer of Dyeing, Madison Woolen Co., Madison, Maine. Sponsors: H. M. Hartnett, J. T. Allen.

Harold Will—Colorist, General Dyestuff Corp., New York, N. Y. Sponsors: C. Z. Draves, J. R. Bonnar.

Junior

Ridgley G. Shepherd, Jr.—Chemical Engineer, Polaroid Corp., Cambridge, Mass. Sponsors: W. F. Deady, J. C. Tebbetts.

ONE HUNDRED AND THIRTY-FOURTH MEETING OF THE RESEARCH COMMITTEE

THE 134th meeting of the Research Committee followed the Council meeting in the Engineering Society Building, New York, on Saturday, April 17, 1943. Present were Chairman Louis A. Olney, Presiding, H. C. Allen, A. I. Anderson, W. D. Appel, H. D. Barker, E. C. Bertolet, J. R. Bonnar, W. H. Cady, E. S. Chapin, R. J. Cheatham, H. Christison, T. W. Church, J. N. Dalton, C. Z. Draves, E. J. Driscoll, W. Ebersold, A. R. Fletcher, A. H. Gaede, A. C. Goodings, S. L. Hayes, A. E. Hirst, W. A. Holst, N. A. Johnson, P. J. Kennedy, D. R. Kneeland, D. P. Knowland, H. W. Leitch, O. F. Marks, J. F. McCoy, J. E. Meili, E. F. Monroe, G. A. Moran, H. A. Morrison, R. W. Philip, F. A. Prisley, R. E. Rogers, R. E. Rupp, B. A. Ryberg, C. H. A. Schmitt, C. A. Seibert, F. T. Simon, G. A. Slowinske, T. R. Smith, R. H. Souther, F. M. Steadman, H. W. Stiegler, F. Tripp, F. R. Tripp, B. Verity, P. J. Wood and H. C. Chapin, Secretary.

The Chairman requested early written reports from subcommittee chairmen on all their meetings; also reports for the 1943 Year Book not later than May 15. Mr. Ryberg discussed possible changes in Bureau of Standards CS 59, with special reference to reinstatement of the dyed standards of the Association. It was the consensus of opinion, including that of Dr. Goodings regarding Canadian practice, that such standards are essential for ultimate reference in disputes, even though less rigid specifications suffice for ordinary use. Mr. Bonnar was appointed Chairman of a committee to confer with the National Association of Finishers of Textile Fabrics on this question. Further differences between the proposed revision of CS 59 and Association gas fading, perspiration and crocking tests were discussed.

Mr. Knowland believed that in CS 59 there should be separate wash fastness tests for rayon, apart from cotton. He said that the Committee on Wash Fastness of Dyed and Printed Manufactured Organic Fibers had arranged for manufacture of a special fabric for tests. Mr. Marks reported that a machine recently placed at the disposal of his committee would permit more rapid progress on shrinkage tests for rayon. Mr. Moran, reporting for the Committee on Wash Fastness of Dyed and Printed Cotton and Linen, described a machine similar to the Crockmeter, devised by the Aridye Corporation for wet rubbing tests. Mr. Driscoll mentioned the greater ability of soft yarns to hold their color under rubbing.

An exhibit of pads from carded blends prepared by Mr. Christison from a new combination of fast and fugitive blues led the Committee to undertake construction of light fastness standards by this novel method. A modification by Mr. Cady, involving combinations of two colors, had proved too sensitive for ordinary standards, but might have special use in research, as in critical calibration of fading devices. Lt. Colonel Steadman outlined plans for light and weather exposure of samples from ten pieces of olive drab dyed wool, in locations representative of all the States of this country. It was proposed that Association standards be exposed simultaneously, with record of sun hours and temperature; and that a report be submitted in the fall.

For the Committee on Accelerated Ageing Tests for Sulfur Dyed Material, T. R. Smith reported further experiments on heating in electric oven, autoclave and Fadeometer. Avondale Mills he said had records of the behavior of considerable material in actual storage over several years. Statistical analysis of strength tests Mr.

Simon said had proved these so unreliable for evaluating deterioration in accelerated ageing, that he was seeking some better method of examination, possibly a chemical test. The final alkaline rinse for sulfur dyed material, recommended by the Committee, was noted by Lt. Col. Steadman inconsistent with the acid treatment commonly given waterproofed fabrics.

Unexpectedly great demand for spray test apparatus Mr. Slowinske reported now met through manufacture, by government permission, of an adequate supply of aluminum nozzles. A manufacturer had been found for the hydrostatic tester. This on smaller samples, and the Suter tester on larger, had each found its special field; and the Committee on Water Resistance of Fabrics was about to undertake correlation of results. The present immersion test, satisfactory for plain woven fabrics, had still to be adapted to pile and matted fabrics.

The Committee on Mildewproofing, Dr. Barker reported, had not found sufficient data for a recommended test; so was planning to distribute samples among its members for tentative tests. Lt. Col. Steadman and Mr. Bertolet outlined the mildewproofing requirements of the army. Dr. Draves presented a brief report from Mr. Bonnar on Moth Resistance. There was discussion of damage to rayon by silver-fish, said by some to be prevented by pigment printing or waterproofing. The protective value of urea-formaldehyde and the immunity of clean rayon were disputed.

A report from Mr. Barnard on Finishing Materials was read by the Chairman. The report of the Committee on Dry Cleaning Mr. Seibert said would be published. For perspiration tests Mr. Christison again expressed preference for room temperature, despite approval of the oven test by his committee. Adequacy of the Quartermaster perspiration test was questioned. Exposure to solution between glass plates, as proposed at an earlier meeting, was said by Mr. Seibert to be unsatisfactory.

Sub-committee chairmen were again reminded that reports for the 1943 Year Book are due May 15th.

Respectfully submitted,

Harold C. Chapin,
Secretary.

ONE HUNDRED AND FORTY-FIRST COUNCIL MEETING

THE Council held its one hundred and forty-first meeting in the rooms of the American Society of Civil Engineers, Engineering Society Building, New York, on Saturday morning, April 17, 1943. Present were President Thomas R. Smith, presiding; Roland E. Derby and Charles A. Seibert, Vice Presidents; Louis A. Olney, Chairman of the Research Committee; William H. Cady, Carl Z. Draves and P. J. Wood, Past Presidents; John N. Dalton, Harry M. Hartnett and Dexter R. Kneeland, representing Northern New England; Allison R. Fletcher and Ben Verity, representing Rhode Island; Kenneth H. Barnard, J. Robert Bonnar, J. Ernest Meili and George A. Moran, representing New York; William Ebersold and John F. McCoy, representing Philadelphia; Thomas W. Church and A. Henry Gaede, representing Piedmont; Robert W. Philip, representing Southeast; Arthur I. Anderson, representing Mid West; Bertil A. Ryberg, Associate Research Director; and Harold C. Chapin, Secretary. The Secretary's report of the 140th Council meeting and financial report of April 9, and the Treasurer's report of April 14, were accepted. A report from the Treasurer of the South Central Section was approved. Reported accepted by letter ballot of the Council was an amendment making Article X, Section 4 of the By-laws read as follows:

"Duties of Sectional Officers. The Chairman, or in his absence the Vice Chairman, shall preside at all meetings. The Chairman may appoint committees other than the Sectional Committee to have charge of special affairs.

"In any year beginning May first a Section may request reimbursement for certain expenses incurred by the Section in the year ended on that date. Such request shall include an itemized statement of these expenses, which may include the expenses of postage, printing and stationery not exceeding thirty-five cents per each Senior, Junior or Associate member of the Section with dues of five dollars fully paid on that May first; and may also include any further expenses, of technical meetings only, not exceeding twenty-five dollars per meeting. On receipt of two copies of the request, signed by the Chairman and Treasurer of the Section, the Secretary of the Association shall issue a voucher, and forward with one of these copies for payment, in the usual manner, of the amount requested; provided that the total of reimbursements to a Section for one year shall not exceed one dollar per each Senior, Junior or Associate member with dues of five dollars fully paid on said May first.

"For the expenses of a newly organized and accepted Section up to its initial May first, the Council may at its discretion appropriate amounts not exceeding a total of one dollar for each Senior, Junior or Associate member of the Section with dues of five dollars fully paid at any one time up to that May first; but this shall not prevent any subsequent reimbursements as provided in the preceding paragraph.

"The Secretary of the Section shall submit to the Secretary of the Association a report of each meeting within thirty days of the meeting."

The ballot provided that the amendment should become effective on May first, 1943; and should not prevent allow-

ances to Sections up to that date in the manner stated in the By-laws before this amendment.

In accordance with recommendations of the Finance Committee it was voted that $7,400 of general funds be invested in Series F National Defense Bonds. The President was authorized to appoint a committee to consider segregation of an endowment fund. Mr. Wood presented a circular prepared by Mr. Herrmann for further solicitation of Corporate memberships, which was accepted with certain modifications.

Mr. Cady reported a meeting of the Publicity Committee at which it was recommended that a statement of Association publication priority rights be printed for distribution to Sectional officers and speakers; that speakers be requested to prepare abstracts for general press release; that forms be provided Sections for convenient statement to the Reporter of scheduled meeting dates, places, speakers and subjects; that research sub-committee chairmen be asked to prepare written reports for presentation to the Research Committee and for press release if desired; and that a column in the published Proceedings be devoted to personal items. It was voted that $200 per annum from date be available to the Publicity Committee from general funds of the Association, for mimeographing and mailing press releases.

The Council voted confirmation of its vote of October 10th, with particular reference to the labelling of textiles, to the effect that the Association is concerned with tests, rather than policies such as those involved in labelling. Mr. Barnard reported progress toward the Intersectional Contest. In consultation with Council and Research Committee the President called the next meeting for June 19, in Providence.

Elected to Corporate membership were Arnold-Hoffman & Co., Belding Heminway Co., Commonwealth Color & Chemical Co., Southern Dyestuff Corporation, and Wyandotte Worsted Co. Each of the following was elected to the class of membership specified, as of thirty days from publication of application, provided no objection be received meanwhile by the Secretary.

Senior

N. W. Akst	I. L. Griffin	D. B. Miller
T. D. Andrews	W. J. Hawk	N. M. Mitchell
W. S. Armitt	A. J. Heinzmann	A. I. Olson
H. D. Barker	W. G. Helmus	A. F. Ottinger
D. A. Barnes	P. G. Hendrix	C. W. Patton
J. P. Bauer	C. H. Henkels	F. I. Pendleton
J. C. Beard	J. Hermes	A. Poremba
M. M. Berliner	C. T. Herzfeld	D. L. Posnak
J. F. Best	R. E. Horsey	W. L. Powell
C. Blount, Jr.	W. A. Hughes	R. T. Reed
A. Brambani	H. Hutten	W. C. Reid
E. A. Briggs	J. S. Jacobs	J. W. Schenck
B. J. Brown	R. W. Jacoby	F. H. Schortemeyer
D. P. Byrnes	J. Jonas	W. H. Scott
D. G. Carmichael	T. Kapala	J. Seyer
J. P. Catalino	J. L. Kurlychek	R. G. Shepherd
A. A. Coleman	J. C. Large	N. C. Simcoe
J. H. Condon	E. Larson	J. V. Stockwell
H. J. Crail	M. Lashner	W. A. Swanson
A. D. Dow	H. Lasky	R. W. Thatcher

SECRETARY'S FINANCIAL REPORT—APRIL 9, 1943

Received and Transmitted to Treasurer	*Applications*	*Dues, Regular and Reinstate.*	*Corporate and Sustaining*	*Miscellaneous*	*Totals*
August 1, 1942, to Jan. 12, 1943	$607.50	$10,214.25	$5,260.00	$525.22	$16,606.97
January 12 to April 9, 1943	502.50	2,400.50	687.50	790.62*	4,381.12
Total in fiscal year to date	1,110.00	12,614.75	5,947.50	1,315.84	20,988.09
Leaving deposited by Treasurer with Secretary					$2,000.00

Miscellaneous items*

Year Books	$408.78
Reporters	63.90
Reprints	6.50
Buttons	12.00
Moth cloth	37.30
Crock cloth	66.90
Knitted tubing	156.00
Dyed standards	30.50
Water test apparatus	9.00
Gas fading blue prints	2.00
	$792.88
Bank charges	—2.26
	$790.62

G. E. Dunn	W. F. Lauer	H. H. Todebush
L. W. Fall	C. G. Lederer	J. Udis
W. F. Ferrazano	J. F. Linberg	V. H. Waite
A. L. Fox	R. M. Locke	W. D. Waters
R. K. Fox	J. Loebl	P. L. Weintraub, Jr.
H. M. Friedman	W. F. Longcrier, Jr.	E. A. Whalen
R. Gibson	L. J. Manseau	R. M. Wiggin
B. Gilbert	F. Marino	L. E. Wilkerson
A. Gloor	G. E. Martin	H. Will
E. J. Grajeck	J. G. Mearns	J. P. Willan
G. J. Greendonner, Jr.	R. F. Merman	E. T. Smith
W. J. Greene	H. J. Meyer	

Junior

M. M. Cooper	R. S. Gregson	R. McSwain
P. H. David	A. F. W. Jaeger	J. Y. Pharr, Jr.
C. J. Duddy	H. Lodge	R. G. Shepherd, Jr.
E. K. Genger		

Associate

E. B. Armstrong	J. D. Hetchler	A. von Hagen
M. S. Baker	J. S. Long	R. D. Wells
B. R. Brown	C. W. Mahnken	O. R. Wieland
K. E. Buff	E. L. Schlesinger	C. Wiggins
W. A. Cummings	F. P. Smith	E. Zerner
M. N. Hacker	L. E. Turits	

Student

N. J. Alexander	E. Gottlieb	J. E. Orr, Jr.

Transferred from other classifications to Senior membership were H. A. Gatterman, E. T. Lesure, A. H. Noble, Jr., J. E. Turner, Jr., and W. B. Worsman.

Respectfully submitted,

HAROLD C. CHAPIN, *Secretary.*

MEETING, PHILADELPHIA SECTION

THE meeting of the Philadelphia Section was held on Friday evening, April 30, 1943, at the Hotel Philadelphian at 7 o'clock.

An address on "Mildewproofed Cotton Fabrics" was given by Lt. Joseph Edmund Goodavage who is a member of the Research and Development Staff of the Philadelphia Quartermaster Depot. A copy of this address will be published at a later date in the Proceedings. It was a most excellent address, covering the structure of the molds as well as compounds used for the destruction of the mold or fungi. Picture slides showed the structure and nature of the various types of mold found present in cotton fabrics and other materials.

A treatise, accompanied by sound moving pictures, was also given by Dr. Donald H. Powers of Rohm & Haas Company, on "Fabricating and Maintaining Plexiglas" and covered points of interest on the use of Plexiglas in military apparatus. This was also most interesting.

This meeting was one of the largest in attendance ever held by the Philadelphia Section; 208 persons attended the dinner, while others came later for the technical program. Among the visitors were Dr. Carl Z. Draves, Past President of the National Association, and Lt. Col. Frank M. Steadman of the Philadelphia Quartermaster Depot, as well as fourteen other high ranking officers.

Respectfully submitted,

BOYCE C. BOND, *Secretary.*

Lapel buttons, bearing the seal of the Association can be purchased by members in good standing, from the Secretary, for $1.50 each.

• CALENDAR •
OF COMING EVENTS

Meeting, Northern New England Section, May 21, 1943.

Meeting, Piedmont Section, Robert E. Lee Hotel, Winston-Salem, N. C., June 5, 1943. **See notice on page P227.**

Council and Research Committee Meetings, June 19, Providence, R. I.

OBITUARY

WILLARD F. VAN RIPER

WILLARD FREDERICK VAN RIPER, sales manager of the dyestuffs division of the Organic Chemicals Department, E. I. du Pont de Nemours & Co., Inc., died in Freeport, L. I., N. Y., on April 13th after a prolonged illness.

Willard F. Van Riper

Mr. Van Riper was born in Jamaica, L. I., N. Y. on August 29th, 1895, the son of Edwin Herbert and Mary Elizabeth Van Riper. He attended Freeport, L. I., High School and New York University where he majored in chemical engineering. He joined duPont as a dyestuff standardizer at the Technical Laboratory on May 1st, 1919. On the following January 1st, he was made a special assistant to the sales director of dyestuffs at the Wilmington, Del., office. He was named district sales manager of dyestuffs in 1932 and sales manager three years ago.

Mr. Van Riper was a member of the American Association of Textile Chemists and Colorists, the Wilmington Country Club, the Society of Mayflower descendants, the Holland Society of New York, the Sons of the American Revolution, and the American Cinema League. He traveled extensively in Canada, the United States and Central America. His hobbies included golf, photography and astrology.

Mr. Van Riper was a regular attendant at the monthly meetings of the Synthetic Organic Chemical Manufacturers Association up until tthe time of his illness last summer and was active in all its affairs.

His high character and kindly, lovable nature endeared him to the many friends who mourn his passing.

Mr. Van Riper was married to Florence Adaline Brown Van Riper and they made their home on Beaver Valley Road in Wilmington.

He is survived by his wife and a sister.

• CALCO BULLETIN

"Dyeing of War Aid Olive Drab Worsted Knitting Yarn" is the title of a new Calco Technical Bulletin No. 679.

Quartermaster specifications PQD-250A, 251B and 253A are outlined in this bulletin along with the fastness requirements and the dyeing procedures by Top and Meta Chrome methods. A sample of the resultant colors is incorporated in the bulletin for the information of the user.

Copies of this bulletin may be secured by addressing the Advertising Department, Calco Chemical Division, American Cyanamid Company, Bound Brook, New Jersey.

• SOCMA MEETING

The regular monthly luncheon meeting of the Synthetic Organic Chemical Manufacturers Association was held on April 16th at the Chemists' Club, New York City. It was announced that the Manufacturing Chemists' Association would hold their annual meeting on June 3rd at the Waldorf, with a session in the afternoon to be followed by the Union dinner in the evening.

It was decided that the association would hold its regular annual informal spring outing and golf tournament at the Seaview Country Club, Absecon, N. J., on June 4th and 5th. The next general luncheon meeting will be held Wednesday, May 12th.

• KOPAN

Hart Products Corp., 1440 Broadway, New York, N. Y., announces the production of Kopan, a permanent cellulose finish. This new product is claimed to be a major development in modern fabric finishing. It is said to be suitable for sheets, damasks, shirtings and many types of knitted and woven fabrics. It is stated that it imparts a permanent coating which adds to durability, strength and appearance. Among the advantages claimed for Kopan are the following: excellent shrinkage control, increased tensile strength, even penetration, elimination of slippage, wide variety of applications, an excellent binder, ease of application, economy of use. It is stated that Kopan is a natural outgrowth of the successful use of Permalon for military fabrics, which has been used extensively for processing mosquito and head nettings. Kopan possesses all the advantages of Permalon plus a flexibility of formula which is said to permit extensive variations for civilian uses and specific fabrics. Celludye Pigment Color Concentrates may be used with Kopan with no additional treatment.

• COLOR PRINTING FILM AVAILABLE

The Southbridge Finishing Co., Southbridge, Mass., has announced the release, without charge, of a new sound color film (16 mm.): "The Color Printing of Cotton Fabrics." This 35 minute film is available to any organization, concern or educational group that might be interested. It is advised that requests for use of the films be made as far in advance as possible. Requests should be sent to the attention of Herbert W. Wilkinson, Jr., Technical Director.

• TEXTILE SCHOOL DEANS MEET

The Spring conference of the Deans of the eleven textile schools was concluded on April 29th after spending three days at Princeton, New Jersey and New York City.

Dominating the discussions was the problem arising out of the loss of so many students to the Armed Services. Students of textile engineering, unlike those enrolled in many other engineering courses, are not as yet qualified to apply for deferment. As a result many textile school students have been required to report at induction centers despite the fact they would have graduated and received their degree if they had been allowed a few months longer, and indeed, in some instances, a few weeks longer.

At Princeton the Deans visited several departments of Princeton University and on Thursday and Friday discussions were led by Miss Helen Baker, Assistant Director of the Industrial Relations section of the University, Kenneth M. Condit, Dean of the School of Engineering, and Hugh S. Taylor, Chairman of the Chemistry Department. Topics covered during the discussion periods included Personnel Problems, Industrial and Labor Relations, Absenteeism, Engineering of Today and of the Future, Textile Chemistry and Fibers, Research and the Textile Industries, and the Future of the Textile Industries in Terms of Scientific and Engineering Advancements.

In New York the war-time functions of textile schools as well as their opportunities in the postwar period were explored, and amongst those who conferred with

the Deans on this subject was Sylvan T. Stroock.

In order to cooperate more effectively in extending the usefulness of the textile schools there was created "The National Council of Textile School Deans." Dr. Thomas Nelson, Dean, North Carolina State College Textile School at Raleigh and Charles H. Eames, President, Lowell Textile Institute were unanimously elected President and Vice President respectively.

Present were E. W. Camp, Dean, Textile Engineering Department, Alabama Polytechnic Institute, Auburn, Alabama; E. V. Carroll, Dean, Bradford-Durfee Textile School, Fall River, Massachusetts; Dr. W. H. Dooley, Principal, Straubenmuller Textile High School, New York City; Charles H. Eames, President, Lowell Textile Institute, Lowell, Massachusetts; Robert K. Eaton, Acting Dean, Clemson College Textile School, Clemson, South Carolina; W. D. Fales, Dean, Textile School, Rhode Island School of Design, Providence, R. I.; Dr. F. M. Feiker, Dean, School of Engineering, The George Washington University, Washington, D. C.; Dr. E. W. France, Dean Emeritus, Philadelphia Textile Institute, Philadelphia, Pa.; M. Earl Heard, Dean, Philadelphia Textile Institute, Philadelphia, Pa.; Franklin W. Hobbs, Chairman, Board of Directors, Textile Foundation; C. A. Jones, Dean, A. French Textile School, Georgia Institute of Technology, Atlanta, Georgia; Dr. Thomas Nelson, Dean, North Carolina State College Textile School, Raleigh, North Carolina; L. E. Parsons, Acting Dean, Textile Engineering Department, Textile Technological College, Lubbock, Texas; Edward T. Pickard, Secretary and Assistant Treasurer, Textile Foundation; and George Walker, Dean, New Bedford Textile School, New Bedford, Massachusetts.

● VISIT BY MEXICAN TEXTILE MEN

The Textile Unit research laboratory of the American Viscose Corporation and the company's rayon plant at Marcus Hook, Pa., were visited recently by a group of seven Mexican textile men, representing every branch of the textile industry in Mexico, who are now in the United States in order to inspect various types of textile plants with a view to carrying out studies that may benefit production in Mexico. The group came to this country with the warm recommendation of the President of Mexico and the Mexican Embassy in Washington, D. C., and have been cordially received by our textile men.

At the American Viscose Corporation's Textile Unit they were able to study all major processes involved in handling rayon yarn and staple fiber and in weaving, knitting, dyeing and furnishing rayon and spun rayon fabrics. This concentrated demonstration was made possible by the fact that the Textile Unit contains under one roof all the necessary machinery and equipment for seven distinct fields—throwing, knitting, weaving, cotton process spinning, woolen process spinning, worsted process spinning, dyeing and finishing.

Prior to visiting Marcus Hook, the Mexican group went through several New England textile mills and in the near future they are to inspect some of the southern mills. The members of the group are Pedro Rivera Flores, Longinos Hernandez Flores, Luis Parra Garcia, Ecuario Leon Lopez, Nemesio Viveros Rodriguez, Anastasio Cisneros Soto, and Martin Camarillo Vera.

● APPOINTED HEAD DYER

Mylan Carrigan has recently been advanced to the position of Head Dyer for the North Star Woolen Mill Company, Minneapolis, Minnesota. Mr. Carrigan has been with the company for the past fifteen years and has supplemented his dye house experience by actual work with prominent dyestuffs companies. It is believed that this change will result in a real benefit to the company in terms of improved products.

● DYESTUFFS

Contents of the March, 1943, issue of *Dyestuffs*, publication of the National Aniline Division, Allied Chemical & Dye Corp., 40 Rector Street, New York City, are described by the following titles: "Super Soap from Oil," "Elimination of Mercury Hazard in the Felt Hat Industry," Art of the Ancients," "Milling Theory and Preparing Action," "Rayon Substitutes for Wool," and "The Need for Control." There are numerous illustrations.

● ADDRESS ON SURFACE ACTIVE COMPOUNDS

Dr. Donald Price, Technical Director Organic Research Laboratory, National Oil Products Company, Harrison, New Jersey, addressed the annual banquet of Alpha Lambda Chapter, Phi Lambda Upsilon at the New York University Faculty Club, 22 Washington Square North on Tuesday evening, April 20th. His topic was, "The Chemistry of Surface Active Compounds."

Dr. Price traced the development of surface active agents from soap to the present day synthetics. He then discussed the structure and synthesis of a number of the established surface active compounds in commercial use.

● ANNUAL MEETING, A.I.C.

The American Institute of Chemists will hold its twenty-first annual meeting on May 15 at the Edgewater Beach Hotel, Chicago.

Following a business session to be held in the morning, the afternoon session will be devoted to a discussion of the parts being played by certain vital products in the war. Speakers include Dr. Bruce K. Brown, Assistant Deputy Petroleum Coordinator, "Petroleum in the War"; Dr. Robert J. Moore, Manager, Development Laboratories, Bakelite Corporation, "Synthetic Resin Plastics"; Dr. H. E. Robinson, Research Laboratories of Swift & Company, "Meats in the War"; and Dr. David Klein, President of Wilson & Company Laboratories, "Vitamins in the War."

At the banquet, the medal of the American Institute of Chemists for outstanding service to the science of chemistry will be presented to Dr. Walter Savage Landis, vice president of the American Cyanamid Company, in recognition of his work in the field of the nitrogen derivatives. Dr. Gustav Egloff, president of the Institute, will present the medal, after addresses by Dr. Maximilian Toch on "Landis, the Man," and Harry L. Derby, president of American Cyanamid and Chemical Corporation, on the achievements of Dr. Landis. An acceptance address will be delivered by Dr. Landis.

● FLAMEPROOF CAMOUFLAGE COLORS

CFP colors for flameproof camouflage netting have been developed by Aridye Corporation which are said to meet all the requirements of the Engineer Corps for flameproofed camouflage shrimp netting. These special flameproof colors are available in two shades, CFP Sand No. 3 and CFP Olive Drab No. 9.

According to the manufacturer, these colors meet the following specifications for coloring and flameproofing cotton camouflage shrimp nets:

U. S. Army Specification

No. T-1669—Corps of Engineers Tentative Specification for Nets, Camouflage, Cotton, Shrimp. This includes provisions from the following specifications:

No. T-1212—Corps of Engineers Tentative Specification for Fabric, Impregnated Camouflage

No. T-1213—Corps of Engineers Tentative Specification for Camouflage Colors

No. 100-12—Method of Test for Infrared.

Federal Specification

No. CCC-T-191—Textile: General Specifications—Test Methods.

Extensive comparative tests have proved that the best results are obtained when the colors are applied in an all solvent solution. However, equally successful results can be obtained with a water-in-oil emulsion if the available drying equipment provides some means of compensating for shrinkage of the fabric. Removal of solvent vapors is necessary with any mixture containing even a small percentage of solvent.

Aridye CFP colors may be applied in a

variety of ways, depending on the equipment available. In general, what is desired is a means of impregnating the fabric and removing the excess liquor, followed by a drying operation. In view of the construction of these fabrics, precautions should be taken to avoid distortion of the net construction during processing.

The manufacturer states that these CFP colors are concentrates and contain the proper blend of pigments, binders and flameproofing materials. To prepare a mix, just dilute with solvent and add the necessary amount of a mildew-proofing agent.

• THERMOSETTING SPREADER COATINGS

Originally developed in 1936 as an interlayer material for high-test safety glass, it is stated that Vinylite vinyl butyral resins have now been found suitable for waterproof cloth coatings to replace rubber. It is claimed that when properly modified with a special Bakelite phenolic resin, these resins can be applied to cloth on standard spreading equipment and then heat-treated or "vulcanized" to obtain extremely tough, resilient coatings. Tests indicate that the coatings will resist boiling water. They are unaffected by alcohol and acetone.

To acquaint industry with this development, the Plastics Division of Carbide and Carbon Chemicals Corporation, Unit of Union Carbon Corporation, has just published a six-page folder entitled, "Thermosetting Vinyl Butyral Spreader Coatings." The folder contains data on formulations, primer coating, pigments, plasticizers, finish coats, solvents, baking, calendering, and cementing. Copies are available upon request to the Plastics Division, Carbide and Carbon Chemicals Corporation, 30 East 42nd Street, New York, N. Y.

• ESSENTIAL TEXTILE OCCUPATIONS

With announcement of the War Manpower Commission's revised definition of essential activities and occupations in the textile industry worked out jointly with the Office of Civilian Supply, the way is now clear for uninterrupted maximum production of essential yarns and fabrics for military and essential civilian use, Frank L. Walton, Director of the Textile, Clothing and Leather Division said recently.

"For the first time, textile workers engaged in civilian as well as military production are classified as essential, providing for a much-needed stabilization of employment in the yarn and fabric industries," Mr. Walton declared.

"This means that approximately 1,000,000 workers in the textile industry are now subject to the provisions of Regulation No. 4 of the War Manpower Commission, titled 'Restricting Transfer of Workers,' issued April 17, 1943."

In addition to the essential occupations listed in the bulletin (Activity and Occupation Bulletin No. 20), Mr. Walton pointed out that occupations in the production of cordage, rope and twine listed in WMC's occupational bulletin No. 27, "Production of Materials for Packing and Shipping Products," have also been declared essential.

"This broadened definition of textile production and expanded list of essential operations have a tremendous significance for the textile industry," Mr. Walton said, in urging every mill employer and worker to study carefully the definition of essentiality as it now stands.

"In the first place," he stated, "the new definitions and the occupational lists will be used by Selective Service local boards in considering requests for occupational deferment of men liable for military service.

"Second, the United States Employment Service will use the definition in occupational lists as a guide to determine which plants should have priority on available manpower.

"Finally, the new definition of textile production defines the area in which the War Manpower Commission's recent order regulating the transfer of workers affects textile employees. This means that because workers in the specified types of textile producing and finishing plants are now in an essential activity, they cannot, under the WMC order issued recently, move on to other essential activities at higher wages unless such movements take place within the terms of an employment stabilization program.

"This order now leaves it up to the individual mill first, to determine the capacity production potential of its machinery, and, second, to do all it can to attain this output to supply both the military and essential civilian production programs," Mr. Walton declared. "It makes no difference whether we talk about woolen and worsted mills, or rayon plants, or cotton yarn and fabric mills—we need all-out production of yarns and fabrics if our goals are to be attained. More than ever before, it is absolutely necessary that both mill operators and employees redouble their efforts to increase output.

"The War Production Board is prepared to do everything in its power, consistent with the overall war program, to expedite textile production by relieving bottlenecks and obstacles to production wherever they occur. Since yarn is the major bottleneck facing all fabric mills, emphasis will be plaed on increased production of yarns from cotton, wool, rayon, jute and all other cordage fibers to the extent that more shifts and longer hours of operation make this possible.

"But success in this program depends in the final analysis on the mills themselves, on both plant managers and workers. If every employee and every manager does his utmost in pushing war production, I have no doubt that our goals will be attained."

• ANNUAL MEETING, BOARD OF DIRECTORS, TEXTILE FOUNDATION

The Annual Meeting of the Board of Directors of the Textile Foundation has just been concluded in Washington. Franklin W. Hobbs of Boston was reelected Chairman of the Board; Frank D. Cheney of Manchester, Conn. continues as Treasurer, and Edward T. Pickard as Secretary and Assistant Treasurer. Other Directors are Donald Comer of Birmingham, Alabama; Claude R. Wickard, Secretary of Agriculture and Jesse H. Jones, Secretary of Commerce.

The work of the Foundation in three principal fields of research, namely scientific, economic and textile education, was reviewed and will be continued on an accelerated scale. Fundamental and applied projects conducted by the fourteen members of the Washington staff have been wholly converted to war work. Milton Harris, the Foundation's Director of Research, and his associates are serving on government and industry committees and they are also conducting six or seven special researches related to the prosecution of the war.

Another highly technical but nonetheless realistic research supervised by Herbert Leaderman under the direction of Professor Edward R. Schwarz at Massachusetts Institute of Technology is being brought to a conclusion, and a 200-page report on "Textiles and the Time Factor; the Behavior of Textile Fibers" will soon be available for distribution.

Patents have been applied for covering a new chemical process under which natural wool becomes highly resistant to the ravishes of moth worms, bacteria and mildew. Arrangements are now being made looking toward the commercial development and application of the new process.

Prior to the meeting Chairman Hobbs entertained at luncheon, his guests being William D. Appel, Chief, Textile Section, National Bureau of Standards; Fessenden S. Blanchard, President, Textile Research Institute, Inc., New York City; Frank D. Cheney, Cheney Brothers, Manchester, Connecticut, and Treasurer, Board of Directors, Textile Foundation; Warren E. Emley, Chief, Organic and Fibrous Materials Division, National Bureau of

Standards, and Member, Textile Foundation's Advisory Committee for Scientific Research; Dr. F. M. Feiker, Dean, School of Engineering, The George Washington University and Textile Foundation's consultant on textile education; Goodwin P. Graham, Auditor, Textile Foundation; Dr. Milton Harris, Director of Research, Textile Foundation; Alexander Holtzoff, Special Assistant to Attorney General, United States Department of Justice; Mrs. F. F. Morris, Textile Foundation; Edward T. Pickard, Secretary and Assistant Treasurer, Textile Foundation; Dr. George Taylor, Vice Chairman, War Labor Board, Washington, D. C.; South Trimble, Jr., Solicitor, United States Department of Commerce; and Dr. R. Y. Winters, Agricultural Research Administration, United States Department of Agriculture and Member, Textile Foundation's Advisory Committee for Scientific Research.

• ADVISORY COMMITTEES APPOINTED

The Director of Industry Advisory Committees, War Production Board, announces the formation of the following industry advisory committees:

Natural Resins Industry Advisory Committee

Government Presiding Officer: Wells Martin.

Committee members are: O. G. Ennes, 533 Canal Street, New York, New York; Geo. Hauxhurst, S. Winterbourne & Company, New York, New York; W. A. Patterson, G. W. S. Patterson Company, New York, New York; A. Scharwachter, American Cyanamid & Chemical Corp., New York, New York; E. H. Winter, H. P. Winter & Company, New York, New York; A. J. Wittenburg, Stroock & Wittenburg Company, New York, New York; John Young, Gillespie-Roger Pyatt & Company, New York, New York.

Water Soluble Gums Industry Advisory Committee

Government Presiding Officer: Wells Martin.

Committee members are: A. N. Cross, Wm. M. Allison & Company, New York, New York; G. J. Desmond, Jacques Wolf & Company, Passaic, New Jersey; C. J. A. Fitzsimmons, Orbis Products Corporation, New York, New York; A. D. Isbetcherian, 59 Pearl Street, New York, New York; R. Kaiser, T. M. Duche & Sons, Inc., New York, New York; Morteza Khosrovshahi, 165 Broadway, New York, New York; Ellis Meer, E. Meer & Company, Incorporated, New York, New York; Henry E. Price, Colony Import & Export Corp., New York, New York; Chas. F. Walden, Thurston & Braidich, New York, New York; Roy L. Zeno, S. B. Penick & Company, New York, New York.

• RAYON FELLOWSHIP

A rayon fellowship at the Ellen H. Richards Institute, The Pennsylvania State College, to study the durability and care of rayon fabrics was announced recently by Pauline Beery Mack, director of the institute. The fellowship was made possible by a grant-in-aid from the American Viscose Corporation.

The objectives of the fellowship are these:

(1) To find how a large number of types of wearing apparel fabrics, principally rayon, perform during wear;

(2) to ascertain to what extent the present laboratory tests will predict the performance of the fabric during actual wear;

(3) to evaluate wear results against a graded series of accelerated laboratory tests, in order to find how the latter can be speeded up in order that they more nearly simulate conditions of use; and

(4) to study methods of care, including laundering and dry cleaning, in order to obtain information which will enable the consumer to obtain the maximum of durability from wearing apparel fabrics.

• CLASSIFIED • ADVERTISEMENTS

The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery or supplies for sale—the rate is $6.25 per column inch or less per insertion.

SOUTHERN SALES REPRESENTATIVE: Nationally recognized manufacturer of textile chemical specialties with headquarters in New York City seeks services of highly experienced sales representative to reside in either Atlanta, Georgia or Columbus, Georgia. This is an unusual opportunity for enterprising representative with technical and practical background. Applicants must state age, draft status, experience and references to insure interview. All letters held in strict confidence. Our organization knows of this advertisement. Box No. 437.

WANTED: Intelligent, industrious man who wishes to learn garment dyeing. Must be draft free. Starting at $35.00 per week with steady growing income. Write Loebl Dye Works, Inc., Roanoke, Virginia.

ASSISTANT DYER: Man with experience in handling cotton and rayon on pads and jigs. Curtain goods experience will be helpful. Location, Southern Massachusetts. Write Box No. 438.

WANTED: Salesman—textile chemicals and specialties. Penna. and N. J. Experienced in dyeing and finishing preferred. Write Box No. 439.

TEXTILE CHEMIST WANTED: Rayon yarn producer has opening for a textile chemist, preferably one with experience with sizing. Permanent position with good opportunities. State education, experience, age and salary expected. All replies will be treated as confidential. Write Box No. 440.

FOR SALE

1—28 stick Klauder Weldon Monel Lined non-hoist skein dyeing machine, motor driven.
1—500 lb. Boiling and Bleaching Kier.
1—28″ Laundry Type, belt driven full open top copper basket extractor.
1—Proctor 2-truck Yarn Dryer with four trucks.
3—Copper Jacketed Tilting Type motor driven color mixing kettles.
1—Set of 23 Lincoln Dry Cans, copper covered, 23″ dia. by 88″ face, complete with horizontal frames, gears, bearings, etc.
1—66″ Voelker Double Bed Rotary Cloth Press.
1—60″ Tolhurst Hydro Extractor, underneath vertical motor drive, 3 phase, 60 cycles, 550 volts with starter.
1—48″ Tolhurst Copper Basket Belt Driven Self-balancing Extractor.

Write Box No. 441.

Big Wartime Swing to Metachrome Dyes

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DOING government work? Then your best bet is to dye the metachrome way – with the *new* Sandoz Metomega Chrome Colors! They can be applied on raw stock, worsted tops, yarns and pieces more easily and quickly than old-style colors. This is especially true in dyeing yarn intended for O.D. sweaters, gloves, wristlets, etc. In level dyeing, too, you'll get excellent results with Metomega Chrome Colors.

They cut boiling time to a minimum . . . show definite fuel savings right from the start. That means *faster* production . . . *greater* labor efficiency . . . *lower* all-round production costs!

Sandoz offers you a *complete* range of Metomega Chrome Colors – unsurpassed in the light fastness they impart to woolen and worsted O.D. shades. And here's something else to remember!–actual mill operations show that metachrome dyeing is the most efficient method for applying chrome colors. Write today for full information on the new Metomega Chrome Colors – or ask for a free demonstration in your mill.

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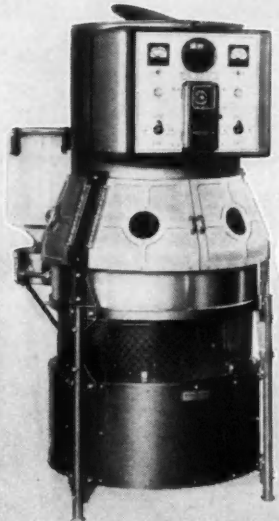
for accelerated color fading



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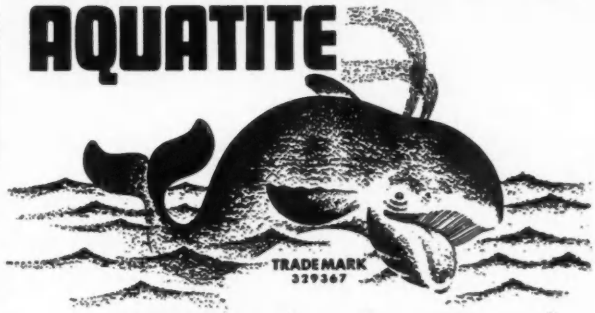

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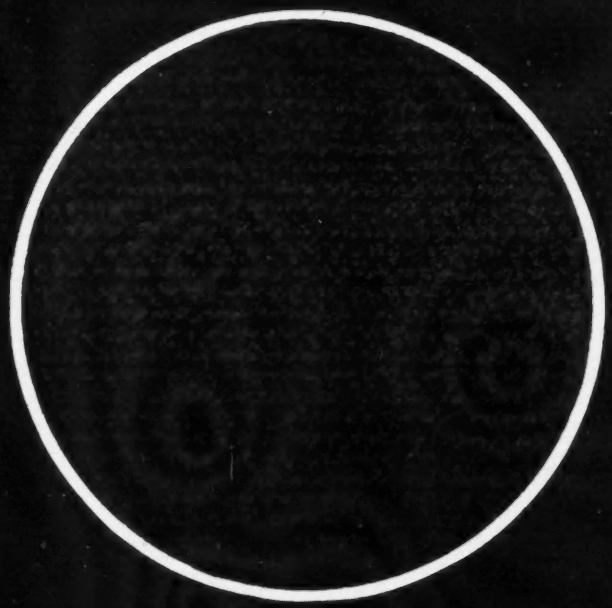

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A MOST ECONOMICAL BASE FOR NAVY AND BROWN SHADES. LEVEL DYEING · RAPID EXHAUSTING. FOR ALL TYPES OF ACETATES. IN ALL APPARATUS.

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They've come a long way from Valley Forge

U. S. Army Signal Corps Photo

WHEREVER they go – into the steaming jungles of New Guinea or the frozen wastes of the Aleutians – the U. S. Army is the best-dressed fighting force in the world. That's a glowing tribute to the speed and efficiency with which the Quartermaster Corps has equipped millions of American soldiers. It is also dramatic proof of the record achievements of a war-minded textile industry.

Imagine the millions of yards of finished fabrics required to equip and clothe an army of 5,000,000 men . . . not counting the civilian population back home! Here are a few figures that tell the exciting story of wartime expansion in the textile industry: In the twelve months, ending September, 1942, the industry consumed 50,000,000 pounds of rayon a month . . . over 4,309,079,500 pounds of cotton . . . 373,334,000 pounds of wool (exclusive of huge quantities of re-worked and re-used wool). A great part of this eight-to-twelve months consumption of textiles went into the manufacture of uniforms, underclothing, tents, sheeting, blankets, tarpaulins and a host of other goods urgently required by the Army, Navy and Marine Corps.

Here at Royce Chemical Company our job is to produce many of the processing agents needed to finish these strategic goods. Chief among these vital textile chemicals are Royce finishing oils . . . hydrosulphites . . . and desizing agents. In this all-important job of keeping our growing army better clothed than the fighting men of other nations, we are proud of the opportunity of joining hands with the textile industry in a great All-American effort.

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